

The International Journal of Orthodontia, Oral Surgery and Radiography

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VOL. XI

ST. LOUIS, MAY, 1925

No. 5

ORIGINAL ARTICLES

ORTHODONTIA, AND ITS IMPORTANCE TO THE GENERAL PRACTITIONER*

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ORTHODONTIA has been very concisely defined by Dr. LeRoy Johnson as that branch of dentistry which treats of the functional nature of the dental apparatus as a whole, and of the laws which underlie its growth and development. This specialty of dentistry has developed from what was once erroneously considered a purely mechanical process to what we now know to be largely a biologic problem. Mechanics, of course, has its place, as in orthopedics and other branches of medicine, to provide the proper stimulus at the proper time.

In scope, orthodontia embraces far more than the correction of irregularities in the positions of teeth and the restoration of occlusal relations for the mastication of food. While it is principally concerned with the normal development of the dental arches, teeth and consequent normal occlusion, it is also concerned, through the proximity of structure and interrelationship of function, directly with the internal and external face and indirectly with the functions of digestion, nutrition, respiration and speech, and through these structures and functions with the health of the body as a whole.

Thus it would seem that a science which endeavors to discover the factors entering into the normal development of the dental arches and the proper functioning of the teeth and contiguous structures, and which attempts to find the influences necessary for their proper maintenance, is of far-reaching importance.

In considering the relation of orthodontia to preventive dentistry and its

*Read before the Section of Preventive Dentistry of the First District Dental Society of New York, at the Academy of Medicine, Feb. 11, 1925.

importance to the general practitioner, we cannot help but realize that the prevention of malocclusion is decidedly more logical than its treatment. It is from this viewpoint that we are approaching the subject this evening.

As in preventive medicine, our attention is being called more and more to causes that become active long before the eruption of the permanent teeth, consequently many cases are of constitutional origin, of both the prenatal and postnatal stages. It thus becomes apparent that dentistry, and more particularly orthodontia, has much in common with pedology along etiologic, diagnostic and therapeutic lines. Preventive dentistry and preventive orthodontia are so intimately related and so interdependent upon each other, that it is impossible to consider one without the other. As the factors entering into their consideration begin at the inception of the ovum, and go hand in hand from that point on, they are particularly operative during prenatal life and infancy. While the control of these factors comes more often within the realm of the physician or pediatrician, a thorough knowledge of the embryology of normal and abnormal teeth and dental arch development is essential in the diagnosis and treatment of conditions which present themselves in practice.

Let us consider briefly a few of the factors entering into the embryology of normal dentition. It is, of course, self-evident, that normal healthy parents will predispose to normal healthy children. Parents having endocrine abnormalities, such as disturbances of the pituitary or thyroid will tend to cause similar disturbances in the child with consequent effect on dentition. Endocrinologists are trying to prove that the absence of certain permanent teeth and the susceptibility to dental caries is due to some inharmony in the endocrine balance. Kidney disturbances in the mother may affect the dental development of the child. A properly balanced diet is all important for the expectant mother to influence normal growth and development. Nutritional disturbances in the mother may result in an unbalanced calcium metabolism, with the consequent deleterious effect on the teeth and supporting structures. The effects of syphilis upon the developing embryo are too numerous and varied to consider here. Such conditions as missing teeth and malformed teeth can often be traced to syphilitic origin. A history of hereditary syphilis will greatly reduce the possibility of a satisfactory orthodontic treatment. Tuberculosis, while not generally considered an inherited disease, may so affect the health of the mother as to seriously interfere with the normal developmental processes of the embryo and predispose it to a susceptibility to contract the disease after birth. A child so affected, will usually have his deciduous and permanent teeth erupt much earlier than is ordinarily the case. Intrauterine influences whether nutritional, functional or nervous, have a bearing on the metabolic processes of the embryo and thus may affect the development of the dental arches and teeth.

The postnatal factors of constitutional origin which affect the growth and development of the dental apparatus and its related structures are largely those of nutrition and function. It is of the utmost importance, when possible, that the child be breast-fed. It is a well recognized fact that the mother's milk, when not deficient in any of the essential qualities, is best suited to develop

the child's physical and dental equipment. The muscular effort in the act of nursing, admirably supplies the necessary stimulus for the development of the mouth and correlated structures of the growing child. Bottle-fed children, generally speaking, have poorer tooth structures and are more prone to malocclusion and lack of muscular development.

The period from birth to the completion of the deciduous set offers great possibilities for preventive dentistry and preventive orthodontia through the influence of diet, because except for the first permanent molars and first incisors, all the permanent teeth are formed after the child is eighteen months old. Under this heading, it might be well to mention the nutritional disease known as rickets, which is due to a deficiency of calcium salts in the diet. Rickets occurs during the growing period of childhood and causes the enlargement and abnormality of the bones of the head and is often characterized, in severe cases, by the disappearance of the angle of the mandible and the elongation and thickening of the body of the mandible and malocclusion of the teeth. A child who has suffered from this disease usually erupts the deciduous teeth late and loses them early and erupts the permanent teeth late. There are certain childhood diseases characterized by high fevers, such as scarlet fever, measles etc., which have a markedly injurious effect on epithelial structures, and are accountable for many of the peculiar markings seen in the enamel of the teeth.

The early recognition of adenoids, which are caused by the hypertrophy of the pharyngeal tonsil in the vault of the nasopharynx, is very important. Adenoids are usually accompanied by mouth-breathing, due to the partial or complete closure of the nasal passages. The retention of this hypertrophied lymphoid tissue will lay the foundation at an early age for malocclusion. The early removal of adenoids, preferably by the fourth year, before the mouth-breathing habit has become well seated and the development in the nasal region affected through the lack of function, will often prevent much trouble in later years. A deflected nasal septum and malformed or malposed tubinates will sometimes cause mouth-breathing, lack of development in the nasal region and improper drainage from the sinuses. Infected and hypertrophied faucial tonsils should be removed at an early age. Hypertrophied faucial tonsils have occasionally been held accountable for the protrusion of the mandible, in the development of a Class III case (Angle), which is characterized by a mesial occlusion of the mandibular to the maxillary arch.

In considering the practical application of preventive orthodontia in everyday practice, it is absolutely necessary to stress the importance of the proper maintenance and function of the deciduous teeth. Along with certain pernicious habits, the improper treatment or lack of care of the deciduous teeth is one of the most fruitful of the local causes of malocclusion. Parents should be taught to appreciate the necessity of preserving the deciduous teeth up to the time each succeeding permanent tooth is to erupt. During the developmental years of youth, the maintenance of function in the deciduous teeth should be a sacred duty with every dentist, because at this period of life function and growth are synonymous.

The deciduous teeth may be said to serve the following purposes:

1. To provide a means for the mastication of food for the child with teeth of such a size that can be accommodated in the small jaws and that harmonize with the small features.
2. To give nature a chance to develop and erupt the permanent teeth.
3. To provide the stimulus, through masticatory function, to help develop and widen the dental arches.
4. To allow nature to erupt the permanent teeth at regular intervals as they are needed in the general plan of growth and use.
5. To exert the proper influences to establish the correct occlusal relationships of the permanent teeth and the harmonious shape of the face.

The most effective means of preventing malocclusion, is close watchfulness and intelligent care of the deciduous teeth. The children should be carefully examined at regular intervals, to detect and treat caries and abnormal conditions of the gingival tissues. On these occasions, observations should be made of the general shape and width of the dental arches, taking particular notice of the relations of the maxillary and mandibular arches. Wherever possible, the family history should be taken to guard against inherited tendencies and predispositions to certain diseases, with their consequent effect on dentition. Observations and careful inquiry should be made regarding any pernicious habits of the child. Such habits as thumb or finger sucking and tongue or lip biting, if continued, will often cause malocclusion and consequent facial inharmony, through abnormal muscular pressure and function.¹ Dr. Harvey Stallard has recently called particular attention to pillow habits as the probable main factor in the development of crossbites and Gothic arches.

Minor irregularities in the alignment of the deciduous teeth do not as a rule exert much influence with respect to the position of the succeeding permanent teeth. When the jaw relation is abnormal, the permanent teeth usually erupt in malocclusion. If between the ages of four and six years, we do not see the normal spacing between the anterior deciduous teeth, we seldom find that the permanent teeth erupt in their normal positions. Under these conditions it is logical to resort to orthodontic treatment.

Between the ages of five and six years the first permanent molars start to erupt distal to the second deciduous molars. Unless the deciduous teeth are all in position and of the normal mesiodistal width or the proper space maintained for any missing deciduous teeth to guide the permanent molars into their normal occlusal relations, one or more of the permanent molars may tend to drift forward. This drifting may destroy the normal relationship of these teeth and disturb the future occlusion of the permanent arches, as the relative positions of the adjoining permanent teeth are largely dependent upon the positions assumed by the first permanent molars.

The pregnant mother and later the child should be instructed in the thorough daily cleaning of the teeth with the aid of toothbrushes. An actual demonstration in the child's mouth, of the proper way to use the toothbrush emphasizing the fact that the gums should be brushed as well as the teeth, is of great benefit. The child should be instructed to brush the teeth after each meal,

if possible, and to always brush them upon arising in the morning and before retiring at night. Oral prophylactic treatments should be given at regular intervals to promote the prevention of caries and periodontal disease and to give the dentist the opportunity to observe any abnormalities in the growth and development of the jaws and eruption of the teeth.

When it becomes necessary to insert proximal fillings in deciduous or permanent teeth, these fillings should restore the normal contour and mesiodistal width of the teeth, and consequently such fillings should be made of amalgam, copper amalgam, gold or some material of a more permanent nature than cement. In deciduous teeth the restoration of the normal contact point and mesiodistal width is essential to protect the interproximal gingival tissue and retain the space for the stimulation of the development of the jaw through masticatory function. Initial caries on the occlusal surfaces of deciduous teeth can usually be controlled by the reduction of silver nitrate under fillings. A tooth in which caries has progressed to the point where it becomes sore to chew on, will naturally be avoided and the process of mastication shifted to the opposite side of the mouth, with the consequent loss of developmental stimulation on the injured side, and the formation of abnormal muscular and masticatory habits. When a neglected cavity is present on both sides of the mouth, as often happens, the child does not thoroughly masticate on either side and consequently bolts the food. The bad effects of this are not only confined to the immediate improper comminution of food and its accompanying disturbances, but to the possible formation of indifferent habits of chewing which may extend on through life. In the insertion of any filling or inlay, care should always be taken to restore the function of the tooth, by contouring and carving it, to reproduce the natural tooth form.

In the event that a deciduous tooth has been prematurely lost, the proper space should be maintained until the permanent tooth erupts. In the deciduous molar region this can be easily done by putting bands on the approximating teeth and connecting them by a wire soldered to each band. In many cases it is possible to use only one band and have the soldered wire rest against the other tooth. The space maintained should be the mesiodistal width of the deciduous tooth; for example, if a deciduous molar is prematurely lost, the space maintained should correspond to the mesiodistal width of the deciduous molar and not that of premolar which is to erupt. When deciduous incisors or canines have been prematurely lost, it is often necessary to develop the anterior region by orthodontic means.

When it becomes advisable to extract a deciduous tooth, extreme care should be exercised not to injure its successor of the permanent set. Care should be taken in removing these deciduous teeth to see that they are removed completely, because occasionally a small piece of a deciduous root will exert sufficient interference to cause an abnormal eruption of a permanent tooth.

It may be necessary in some cases to extract deciduous teeth which have been retained too long, due possibly to wedging of the approximating teeth or some other cause. Prolonged retention of deciduous teeth, especially molars, will exert a pronounced tendency to cause malocclusion. The x-ray is usually

a better diagnostic factor in these cases than the age, due to the marked variability of eruption in different individuals. If the deciduous molars, in the maxillary and mandibular arches, are not lost at approximately the same time, the difference in the mesiodistal width of the deciduous and permanent teeth will prevent the normal interlocking of some of the permanent teeth. In extremely rare cases is it advisable to extract a permanent tooth to help correct a malocclusion and then it should only be done on the advice of an orthodontist.

It is a good plan, as a matter of routine and the prevention of possible embarrassing future surprises, to x-ray the entire mouth when the children in your practice reach the age of about six years. By this method one can locate the presence of any supernumerary, malposed or impacted teeth and also discover the absence of any of the permanent teeth.

The first permanent molar is exceedingly valuable in the general scheme of normal occlusion and is often called the key of occlusion. Every possible care and effort should be given to preserve its health, structure and function. Upon the correct interlocking of the cusps of the first permanent molar, depends probably more than any other one factor, the establishment of normal arch alignment and jaw relationship, so their loss is of serious import and far-reaching influence. The occlusal surface of the first permanent molar should be examined as soon as it appears through the gum and treated as indicated, to preserve it in a normal healthy condition. The first permanent molar will readily accumulate débris, from the time it erupts until it occludes with its antagonists of the opposing jaw. It should thus be carefully brushed and watched during this period, until it comes under the influence of the normal cleansing action present during mastication in normal occluding dentures.

The basis of our diagnosis for prevention and treatment to a large extent, depends upon our understanding of normal occlusion. The dental profession is deeply indebted to Dr. Edward H. Angle, who many years ago presented his conception of the ideal normal occlusion. This was generally accepted and its principles are utilized today in all branches of dentistry. Recently, however, there has been a tendency to modify, especially among orthodontists, the conception of normal occlusion, in the form presented by Angle to what might be called the individual normal occlusion. This tendency is possibly due to the knowledge gained in the treatment of many orthodontic cases and the observations made of the resultant successes and failures. This modified conception of normal occlusion can best be expressed in the words of Dr. A. LeRoy Johnson.² "The condition of occlusion, which is the goal of orthodontic procedure, is that which will best establish and maintain the physiologic processes which make up the masticatory apparatus as a whole. We are concerned with occlusion as it is related to the functional processes of the organism as a whole. The goal of orthodontic treatment is physiologic occlusion. As normal, indicated by type, is our best guide to what *may be* physiologic, we retain the term normal and refer to our objective as normal physiologic occlusion." Normal occlusion is of paramount importance to all of us and we should give considerable thought

and study to the understanding and application of its principles as advocated by Angle and more recently qualified by Johnson.

It is generally agreed that normal function is the foundation of mouth cleanliness, and as normal function is largely dependent upon normal occlusion, we cannot help but realize that the nearest approach to normal occlusion, as possible, is essential to every individual in the maintenance of mouth hygiene. The excursion of food over the teeth in the act of mastication assisted by the action of the lips, cheeks and tongue, provides the natural cleansing process in a mouth having a normal occlusion. The health of the investing tissues of the teeth is maintained by the stimulation of the vascular structures, for example, in the gums by the friction of the food over them and in the pericementum by compression during the act of mastication. Consequently, when malocclusion is present, we find the natural cleansing processes impaired and the health of the investing tissues affected because of this and because of perverted function. Conditions which impair the natural cleansing processes also make the process of artificial cleansing more difficult.

Probably no specialist of dentistry appreciates the possibilities of orthodontia in preventive dentistry, as does the periodontist. Every day he sees pathologic conditions in the mouths of patients, due wholly or in part to the lack of proper orthodontic prevention or treatment. He is constantly being called upon to treat periodontoclasia in its various stages resulting from local causes, ranging from a simple traumatic occlusion to a complete malocclusion of both arches. Unless periodontoclasia, due to malocclusion, is recognized in its first stages and then orthodontically treated, the success of orthodontic treatment in cases which are well advanced, is very doubtful. Here again is emphasized the importance of preventive orthodontia.

Now, in regard to early orthodontic treatment and the proper time to begin treatment, no definite age can be set. The question is essentially one of diagnosis. A condition which interferes with normal development should be corrected, the general health and well-being of the child as a whole permitting, when it first becomes apparent. At an early age the treatment is simpler, the result more easily maintained and the smaller number of the contributing factors necessary to be considered. The important thing is to decide when to treat and when not to treat, upon the basis of whether tooth or jaw relations are interfering with the normal developmental processes.

In closing, let me stress again the importance, in everyday practice, of maintaining the health and functions of the deciduous teeth and first permanent molars, by careful watchfulness and intelligent treatment.

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THE RELATION OF CUSP INCLINATION TO ALVEOLAR INTEGRITY*

BY JOHN OPPIE McCALL, B.A., D.D.S., F.A.A.P., F.A.C.D., NEW YORK CITY

THE study of any problem whether in physics, chemistry, biology, etc., is usually best carried on when the subject under consideration is subdivided and the component parts of which it is made up are investigated each by itself. The subject of this paper has to do with certain factors which affect the health of the periodontal tissues. The investigation of the diseases to which these tissues are subject has reached a point where practically all are agreed that traumatic occlusion is one of the most important etiologic factors in their causation. For some years past, those of us who are especially interested in this branch of dental science, have been investigating the manifestations of this pathogenic agency. We have determined the various relationships of the teeth which may give rise to traumatic occlusion. And, we have traced to their very beginnings the signs of disease by which the presence of traumatic occlusion may be detected in the mouth. With these points established, we now turn our attention to some of the collateral problems which center in this question of traumatic occlusion.

One of the striking facts to which our attention is often called is the lack of uniformity in the effects produced by similar occlusal disharmonies. For instance, one individual may exhibit an occlusal arrangement evidently productive of excessive stress and yet at a fairly advanced age may show little or no disease of the periodontium. Another individual may have teeth so placed as to appear more nearly ideal in their relations and yet at an earlier age may show evidence of an advanced case of periodontoclasia. It is evident from the study of such anomalies that the state of health in the mouth is not entirely dependent on the functional harmony of the occlusion. The other factor or factors in the case are usually referred to somewhat vaguely, as systemic causes. They have been the subject of speculation for many years. But our knowledge in that field is still far from complete and therefore incapable of exact practical application.

Our attention at the present time is largely centered upon diet, and a vast amount of valuable information is available as to the effects of vitamine and calcium deficiency on the integrity of the skeleton. Dr. Percy Howe, to mention only one of the investigators in this field, has produced startling aberrations in the teeth and jaws of animals fed on deficiency diets. These experiments furnish us with fundamental material for the study of this problem. But the effects produced are so greatly in excess of what we commonly see in the mouth, that the analogy to be drawn is not as yet clear. When we see the head of a monkey with ragged holes in its skull, and alveolar

*Read at the Fourth Annual Meeting of the New York Society of Orthodontists, March 11, 1925.

bone so spongy as to give virtually no support to the teeth, we are reminded of early experiments in chemistry, in which equally profound effects were produced. In these experiments, disintegration of complex molecules was induced and was so rapid and so complete that intermediate changes could only be a matter for speculation. So too in the field of dietary experiment, the spectacular alterations in structure give us valuable information, but, nevertheless, leave us uncertain as to the practical application of the knowledge so gained.

In other words, while we concede the importance of faulty diet as a factor in disease, and even more the importance of correct diet, as a factor for the building of sound resistant alveolar structure, we, nevertheless, have not arrived at a point where we can write out the formula of the much desired dietary program. It will, therefore, be necessary to assume that the quality of the periodontal structures in the patients who come under our observation, will vary from case to case. And we must also admit that we have no infallible methods by which we can, through diet, build up the mouth whose tissues may be below par from the standpoint of resistance.

It is also unfortunately true that we have no means of diagnosing the quality of the periodontal tissues, except as may be made manifest through the encroachment of disease. The periodontist recognizes this fact and is at the present time especially intent upon the discovery of the earliest recognizable signs of disease. What he does in these cases may be summed up under three headings,—the removal of foreign irritating material, the establishment of functional harmony, and stimulation for the purpose of raising resistance. With the first and last of these we are not at present concerned. The establishment of functional harmony must be considered from the standpoint of both the arrangement of the teeth in the individual mouth and the quality of strength of the alveolar structure in that mouth.

In many instances, patients who have an evident deficiency in the structure of the periodontium, will also exhibit a varying amount of traumatic occlusion. This finding is so constant as to tempt one to state it is an invariable relationship; and that disease will ensue where such a relationship exists is inevitable. But we also occasionally see cases in which the occlusal arrangement approaches perfection and in which disease is nevertheless to be found. When such a condition exists and disease is present or is seen to be approaching, the periodontist finds himself confronted with a problem difficult of solution. Experience in the treatment of advanced cases of periodontal disease has taught us, that in relieving traumatic occlusion we have two factors which must be taken into account, viz., excessive vertical stress and excessive lateral stress. Vertical stress is dependent on the amount of pressure exerted upon a tooth as the jaws are closed in either centric or eccentric occlusion. The element of lateral stress is involved when the jaws in closing, bring one inclined plane against another. It is more prominently invoked when the jaws are given lateral movement while the teeth are in contact. The periodontist finds that while both kinds of stress are injurious, excessive lateral stress seems frequently to cause greater damage than excessive vertical stress.

In the title of this paper I have raised a point regarding cusp inclination. This enters into the consideration of our problems as it affects the magnitude of lateral stress. To obtain the clearest understanding of this point, it will be necessary to consider briefly the mechanism by which the various movements of the mandible are produced. We find that the condyle rests in a depression known as the glenoid fossa, in which it has a considerable range of movement. When the jaw is protruded, the condyle is directed forward and down by a bony prominence called the eminentia articularis. When lateral movement is produced, one condyle moves forward, as previously described, but does not usually come forward enough to engage the eminentia articularis to an appreciable degree. At the same time the opposite condyle moves laterally in the glenoid fossa. In neither instance is any provision made for deflection of the mandible downwards, as in the case of the protrusive movement. When we study the lateral movement of the mandible as we see it in the mouth, we notice deflection of the mandible downwards, as the inclined planes of the mandibular teeth engage the antagonizing inclined planes of the maxillary teeth. Since this deflection is not provided for in the temporomandibular joint, and since the pull of the muscles of mastication tend to draw the mandible upward, as well as laterally, it is evident that the alveolar process must withstand the stress involved in the downward deflection of the mandible through the agency of the gliding contacts of the inclined planes. It will also be evident that the magnitude of this stress will depend not only on the magnitude of the force applied by the muscles of mastication but on the angle of the inclined planes. The greater the divergence of the slope of the inclined planes from the horizontal, the greater will be the stress produced when the jaw is moved laterally, assuming that the pull of the muscles is constant.

In the treatment of advanced cases of periodontal disease, the periodontist frequently finds it necessary to reduce lateral stress. And this requires a remodelling of the occlusal surfaces so that the slope of the inclined planes makes less of an angle to the horizontal. In this manner only, is he able to relieve stress to a sufficient extent to permit the rebuilding of healthy tissue. We may, for the sake of argument, if not from a conviction of the truth, admit that such remodelling as is here described, is a correct procedure in a case exhibiting advanced disease. We may not, however, be quite so ready to admit the desirability of a similar remodelling of occlusal surfaces in the mouth which is in a state of health. Yet the logic of the situation forces us to consider the advisability of performing this operation in selected cases.

Let us revert again to the thought of the variations in the quality and bulk of the alveolar processes in different individuals. I think we can safely admit that the jaw having a high degree of development and high structural character, will withstand considerable lateral stress. In such a case the teeth may exhibit long pointed cusps having steep inclined planes, and stress imposed by the movement of these planes past one another may be well tolerated. The reason for this is, of course, that this stress falls within the range of normal function for that individual. But when an individual has teeth of

similar shape and cusp inclination and the structural character and bulk of the alveolar process is inferior, it will be realized that the lateral stress in this case will be beyond the range of normal function for that individual. We must remember that normal function is predicated on the strength and integrity of the tissues as well as upon the use to which they are put.

Let me at this point recall to your attention that at the present time we have no means of determining the inferior quality of the alveolar structure, except when we see it demonstrated through the encroachment of disease. I, therefore, make no plea for universal alteration of steep inclined planes. The case exhibiting this type of tooth, however, requires the closest scrutiny and at frequent intervals.

I have so far said nothing about the attainment of occlusal harmony through orthodontic treatment. This is partly because I have publicly advocated orthodontic treatment as the ideal means of attaining this end. And I think I need not stress the point that when orthodontic treatment is given, one of the objects to be sought is the placement of the teeth in such a position that the inclination of all cusp outlines will be normal. To permit teeth whose roots are tipped, to remain in such a position will only prolong the excessive lateral stress which the periodontist wishes to see relieved, and to produce an uncorrected tipping of the teeth in the course of orthodontic treatment, is to invite future trouble. This is a point which I am sure I need only mention in speaking to this audience. As regards harmonizing of the occlusion, I can only reiterate that orthodontic treatment presents the ideal means to the end.

But I have, within the past year or two, had occasion to ask myself whether or not, other measures might not at times be needed for the protection of the tissues in cases where the alveolar structure might be found to be of inferior quality. This question is raised in connection with the type of cases which may be assumed to have been brought into a state of perfect harmony as regards the relations of the teeth and their planes to each other. It is not a question of the perfection of occlusal relations but a question of the relation of cusp inclination to alveolar integrity. If alveolar integrity be threatened by the angle of the cusps, and if this angle is as perfect as orthodontic science can make it, what procedure can be invoked which will under such circumstances protect the periodontium?

SOME VARIATIONS IN THE DEVELOPMENT OF THE LINGUAL ARCH*

BY WILLIAM C. FISHER, D.D.S., NEW YORK

IT is with some timidity that I interject into your program today a purely mechanical paper, after hearing such wonderful scientific discussions as we have had at the meeting. There is no one who desires to encourage the progress of research more than I do, and I do not believe that we will have arrived until we have prevented malocclusion instead of corrected it, any more than I believe the dental profession will be arrived until it has prevented caries instead of repairing caries. Nevertheless, that golden day seems so far away, that if we are to practise orthodontia we have to move teeth. With that slight apology I will invite your attention to the results of some of the pure mechanics of orthodontia.

In calling your attention today to some of the variations in the lingual arch, let it be understood that I do not advocate the lingual arch to the exclusion of the labial arch, for I consider that there are many conditions in which the labial arch will certainly serve the patient far better than the lingual arch, and again, there are many cases in which both the labial and the lingual can effectively be used in combination. Particularly is this true where you desire stabilization of the molar anchorage in using the high labial arch with finger springs. There are a few, and I am glad to say but a very few, men who consider any deviation from the labial arch to be absolutely unjustifiable. That I naturally consider, extremely narrow-minded and unworthy of scientific men in our specialty.

I desire to give tribute to Dr. John V. Mershon, of the University of Pennsylvania who, through the development of the Mershon attachment, has done more to develop the lingual arch and place it in its high and favorable position than any one man. Yet I would give due credit also to Dr. Victor Hugo Jackson, of New York, who so many years ago, first expounded certain principles and forces as applied to the lingual surfaces of the teeth that have become almost a habit to us today. To mention all the men who have from time to time contributed to the unusual adaptations of the lingual arch, or who have devised different manners of applying a spring force, would be almost like a roll call of the leading orthodontists.

I shall have occasion to show you, either by slides or models, the work first of Mershon, than whom no one has been more generous to the specialty. I visited Dr. Mershon's office and spent two days with him right at the height of his practice, and I was followed three days later by Dr. Nashfield, who also spent three days with Dr. Mershon, at the height of his work, and later, Dr.

*Transaction of the European Orthodontological Society.

Joseph Levy of Washington spent three days with him. I cite that, to show how much good can be done by a man of that high class in bringing together men who are willing to learn the particular work carried on in the office, to see the work done hour by hour on the patients, and I know no man in our specialty in America who has been kinder or more generous than Mershon, although there have been many others.

I was also able to bring with me specimens of the work and report of cases as developed by Dr. Owen A. Oliver, of the Vanderbilt University; Dr. C. C. Howard, of Atlanta; Dr. Martin Dewey, of New York; Dr. George B. Crozat, of New Orleans, and Dr. Lowrie J. Porter, who devised a lock I will show you today. I did not know that Dr. Crozat was crossing the Atlantic with me, and therefore I must apologize to him if I show some of the adaptations of his work. I understand he has some of his own particular work with him, and I trust the President can induce him to give us a clinic on it tomorrow.

Dr. Fisher then exhibited a large number of slides illustrating the subject.

DISCUSSION

Dr. Barrows said he had used the lingual arch quite a lot and he had found that he could do a great deal of work with it, but he would not attempt to widen an arch with it to a great extent because it was apt to tip the premolars, and when they were tipped it was difficult to get them back. He thought the great advantage of the lingual arch was its inconspicuousness, which was a great benefit; but for the twisting of teeth or straightening teeth that were twisted, he thought the lingual arch was a very slow process. For irregularities in the front of the mouth, he preferred the ribbon arch and he always put the lingual arch together with it. The great thing in the lingual arch was in the retention of the teeth after regulating was done. To do that, the lingual arch was put on the inside and on the maxillary teeth, and he put on a removable arch which could be taken out at night. He thought every orthodontic appliance had its uses, and the lingual arch had come to stay but it was not possible to do everything with it.

Dr. de Nevrezé said he had had much trouble with the lock, and had made a little improvement for the locking of the lingual arch which he would show at the clinic on the following day. Instead of round wire he used two half round wires.

Dr. de Nevrezé demonstrated his method on the blackboard.

Dr. A. Chiavaro thought that every orthodontist must use whatever appliance was most beneficial, and use it according to the necessity and condition of the patient. It seemed to him that the application of the lingual arch could be explained in the phrase that "extremes meet"; it was a very good scheme for very poor and very rich people; it was good for the very poor because it was cheap, and it was good for the very rich because it did not show.

Dr. W. S. Davenport said he had been very much interested in Fisher's exposition of the developments of the lingual arch. Most orthodontists worked on the same lines, but Fisher seemed to have gone further in the use of the finger spring. In a private conversation with Fisher, he asked him why he did not use the invention of Ainsworth, of Boston, who used the lingual arch years ago in connection with external arches, and Fisher referred to Ainsworth as being one of the founders of the idea. As Chiavaro had said, the lingual arch was good for some patients and was a very slight method. In its application it seemed to him as if Dr. Fisher had been wasting a good deal of his time in some of his cases. It had been suggested by Barrows that in the spreading of an arch by applying tubes to the teeth the teeth were carried bodily upwards. Angle

carried the teeth bodily upwards, and at the same time carried the premolars and other teeth into the line he desired, always placing his appliance on the teeth furthest in the mouth. When that tooth had taken its place it dragged the others along with it. In all regulation cases he had come to the conclusion that Ainsworth was correct in establishing what might be termed the Roman arch, which was a definite arch to work to and it was Ainsworth's method that he himself had employed. Davenport, by means of drawings on the blackboard, explained the principles of the Roman arch and his method of dealing with his own cases. He said he should criticize the principle of the lingual arch alone. The trouble had been explained by Dr. Case, and especially by the late Dr. Kingsley, in relation to the position which the teeth occupied. Pushing the teeth out of line did not regulate the mouth at all, that was only the beginning of it unless an appliance was used that would carry the whole thing bodily, and when that was done it illustrated the fundamental principle of the keystone of all arches and the teeth would remain. In fact, when the dentist had learned to carry all the teeth over bodily, he had learned the fundamentals of orthodontia. Those who had tilted a molar out of its normal angle knew that it took longer to get it back into line than to correct the case, if they worked on the right principle. He did not think it possible to get away from the double arches. It was necessary to remember that a dental arch represented thirty-two stones and two arches working one on the other, and every stone must be in proper relation as explained by Ainsworth, and in order to accomplish that it was necessary to have a definite plan. When the Roman arch was first built the Romans had a form to build it on and every stone had to carry its definite weight. In orthodontia it was necessary to have a form to build on and then a line to work to, and the only way was to have two bars, the inner bar and the outer. Dr. Fisher had not given ideas as to the application of the lingual arch, but he did not say that he never used the external arch. He was sorry the members had not had the privilege of seeing some of the remarkable work he was doing in connection with a thousand and one things of orthodontia.

Dr. J. T. Quintero said he had used the lingual arch quite extensively for the last two or three years, and at the time he started with it he had many difficulties because he did not know how to make it, and when a man did not know *how* to make a thing he had to work at it for a long while before discovering the proper methods to practice. It was quite a few months before he was able to say what was right and what was wrong. After he had been using the lingual arch for a certain time, he discovered that when he had a very close bite it was very difficult to place the lingual arch on the maxillary teeth behind the incisors without having the mandibular teeth strike it. He thought it out for a long time and finally got round it in the following manner: He put an anchorage on the molars, as was generally done with the lingual arch, and instead of carrying the arch around the anterior portion of the arch, he simply brought it across the palate directly, and from that transpalatine arch brought two auxiliary wires as far as necessary, and with that appliance he obtained the same movements as were obtained with the lingual arch and he avoided the trouble which arose in very close bites of having the mandibular teeth strike the arch and so be in danger of breaking the arch.

Dr. A. L. Hipwell thanked Fisher for the time he had given and the distance he had traveled in order to present the society with so many interesting things in connection with the lingual arch. In his estimation, the lingual arch was like a pendulum—it had a swing. There was a great deal of enthusiasm now in all the journals in regard to the lingual arch, but the fundamental principles had not been changed. It even came back to the Coffin plate, with which Coffin did wonderful things. The fundamental principles of the labial arch had not been changed. The simplicity of the lingual arch was very beautiful, especially for the men who were operating in America, but when the patients came away and an accident occurred and they were referred to a dental surgeon in this country, a considerable time had to be spent in repairing the arch, and in putting it in position and working order again. Most men did it more from *amour propre* than from the desire to gain, because there was nothing in it financially. Men did it because they loved ortho-

dontia and their brother orthodontists across the seas. In a great many cases the orthodontist found the appliance was not strong enough. He had used a combination of the labial arch and the lingual arch, having got his inspiration from Dr. Hawley twelve years ago, who told him he used it a great deal with little children. He took Hawley's idea because he was not a very original man himself. In fact, it would be presumptuous for him to say anything original when there were present such bright lights from America.

Dr. C. d'Alise thought the lingual arch should be limited to a very few cases because there was a physiologic principle underlying that subject. With the lingual arch the movements of the tongue were limited, and it was well known how important was the action of the tongue in the shaping of the arches. Generally in cases of malocclusion the force of the tongue was very greatly needed. The lingual arch limited the capacity of the mouth, which was a very grave thing. Generally the arch was narrow and the tongue did not find its necessary place and therefore was pushed back on to the larynx, limiting the passage. He never used the lingual arch especially when the ribbon arch was available. Every man had his own system, but where some physiologic principle entered into the matter that principle had to be respected. In malocclusion the proper thing was to think of the oral cavity, and the lingual arch was directly opposite to that principle and therefore he thought that the lingual arch should be very rarely used. Orthodontists had to look to something much more important than the appearance of the patients; they had to cure them, and not satisfy their tastes.

Mr. Harold Chapman said he appreciated Fisher's paper very much indeed. He had also had the pleasure of being in Mershon's office earlier in the year, and he noticed on more than one slide a little spring, which Fisher evidently overlooked in his presentation. It was simpler than any of the others, and he would show it on the blackboard exactly as Mershon had shown it to him. The auxiliary spring was soldered, as Fisher had shown, and bent round with a pair of pliers and brought up parallel to the main arch. He did not know which Mershon was using, that or the larger one, but it seemed to him that it offered less likelihood of being disarranged in use. The reason Mershon gave for bending the spring in that manner was that the loss of temper which occurred through the heat of soldering was restored by making the sharp bends in the wire. He should like to ask Fisher a question about the T springs; whether he obtained the forward movement in the incisors by bending the arch to a gradual lower position until it met the gum margin, and whether he used the same method of moving the premolars. It seemed to him that the premolars would offer very little room in which to bend down. With regard to the actual use of the lingual arch, he had found that placing loops, one in the center and one on each side, to be a very useful method of getting forward lateral movement of all the teeth, in contradistinction to using the finger springs. Both methods had their places.

Dr. Fisher, in reply, said he had not brought a universal appliance forward by any means. It was necessary to supply the appliance best suited for every case. But he did insist that the lingual appliance, when properly made and properly handled, could supplant the labial arch and where it did not supplant it, it could supplement it. There was no question about that; it had been demonstrated by many operators in America. Mershon, with his immense practice, used the lingual arch in 80 per cent of his cases, and he was a successful man. With regard to the remarks as to the use of the ribbon arch, he would only ask why so much metal should be put in the mouth of children if the work could be done simply with an inconspicuous appliance. He granted that many enthusiasts went too far; as had been said, the pendulum would swing. A man was bound to get into trouble with the pin teeth and ribbon arch before he mastered it, or if he did not he was an exception amongst the whole profession. Another speaker had referred to the T bar and said that it would tip the teeth. It was possible to tip the teeth with the old Angle labial wire and ligature. If teeth needed any very great bodily movement it was necessary to revert to a stable anchorage such as the old pin tube or the ribbon arch or the method employed by Dr. Robertson, of California, or Dr. Case. If an inconspicuous appliance for

bodily movement of teeth was needed there could not be a finer appliance than the bidental arch with the band attached, which was nothing more nor less than an application of the pin tube method. With regard to the appliance being good for retention, that was true. If teeth were put into proper position with any appliance and they were in their functional position, the inclined planes of those teeth, if they were normal well-formed teeth, would retain them better than anything that could be made, but if the teeth had not been got into position a patient might wear retentions for twenty-five years and the teeth would not stay there. A question had been asked as to why time should be wasted with such an appliance. The men who had perfected themselves in that kind of work could make a lingual appliance while another man was putting on about three ribbon arch bands. It should be realized that not more than 10 per cent of the malposed teeth needed bodily movement; 90 per cent of all teeth in malposition were tipped, and the x-rays would prove it if a stereoscope x-ray picture was taken. With regard to Dr. Barrows' remarks about anchorage, the anchorage was in the main arch wire, about 16-gauge, which was thirty-six thousandths, and from that he threw out the finger springs, and it was the little finger spring that did the work. It should be realized that it did not take much force to move teeth. Generally it was a ease of developing tissue, not moving teeth. If he were shown a bad case of malocclusion he would show where the endocrines were all unbalanced and the child below normal, and tissue had never been built. Those who practiced orthodontia correctly were stimulating bone growth. From Davenport's drawing one might think it was a question of regulating the teeth of adults. Most cases were mixed dentures. He frequently took a photograph of a case with many of the teeth, but in many cases where the appliance was used, as well as many others, the premolars were merely in eruption. When they were in malocclusion they erupted lingually. For every one case of teeth in malocclusion labially there were ninety-nine that were in lingual malocclusion. It was easy to catch that tooth as it was erupting, and with the gentle force of the finger springs, 22-gauge, guide it into its proper position. It was seldom that teeth would be pushed very far if the thing was done slowly; it was only when the work was carried on rapidly that the teeth were carried out of the line of occlusion. If the work was done slowly and the inclined plane was in proper occlusion there was no need to worry any further. With the fine auxiliary springs it would be found two months afterwards that very often the teeth had moved away from the spring and there was sufficient space to pass an instrument easily. Bone growth had been stimulated and the tooth stimulated to go to its normal position, and the bone development had continued after the force of that spring had expired. Hipwell had spoken of cases that came to Europe with lingual appliances, but he did not say anything about the cases that came to America with labial appliances with which the American practitioner had to deal. Very few practitioners in Europe would get any of his cases with broken appliances. When his children came to Europe to live for three or four months he took everything off, except possibly the bands on the molars, because he thought that the time which was spent in replacing when they came back was less than repairing or making new appliances. He had allowed Nature to function a little bit. Kempel had once said at a meeting that many cases would be much better off if they were treated with the appliance in a drawer in the laboratory rather than in the mouth. It was surprising the wonderful benefit that accrued by leaving a case free of appliances for several months during certain periods of the growth of the child, particularly if the deciduous teeth were being lost and the premolars were in eruption. Why put an appliance on if one was not sure that those premolars were coming in malocclusion? The appliance should be taken off and the practitioner should observe whether, with the work he had done that far, the premolars would not come into proper occlusion; in other words, simply try to counteract the maldevelopment of the jaw, stimulate bone growth, take the appliance off and give the child a rest, and Nature would be kind enough to bring about a beautiful result. All appliances used in the mouth were an abomination to the patient; they were never intended to be there and were contrary to nature, but the dentist had to endeavor to do something, and the best he could do was with an appliance. It was remarkable what a child would stand. He himself had an

appliance made for his own mouth as a specimen, but he did not wear it half a day and after that he had great sympathy for the children, and attempted to simplify the appliances as much as possible. With regard to the tipping referred to by Davenport, any time too much pressure was put on the tooth, if it was in correct vertical alignment, the tooth would be tipped, but it would be found, particularly in the mandibular incisors, that in 75 per cent of the cases there was a lingual inclination of the vertical axis and one was very glad to have that inclined plane to push on. Like everything else, of course, it was necessary to keep a careful watch on things. He was afraid dental surgeons had been attempting to finish their cases too soon, endeavoring to get through with the case and call it finished. That was all well and good if there were twenty-eight teeth fully erupted, and the age of the patient was from fourteen to twenty, but most of the patients were under ten years of age.

REMINERALIZATION OF THE ENAMEL AND DENTINE AND ITS PROPHYLACTIC VALUE AGAINST CARIES DENTIUM*

BY DR. G. LIND, AMSTERDAM

THE aim of all our scientific investigations is to come to an exact knowledge about the real nature of the biologic processes which build up the human body and of the pathologic processes which threaten and destroy this beautiful but complicated organism—and prophylaxis, the most important and practical use of this knowledge.

One of the indications for our orthopedic treatment of dentomaxillary irregularities and deformities—in those cases where we by our prophylactic measures have not been able to prevent them—is also the prophylactic value which successful treatment exerts against caries.

But how often does it not happen that we see patients with the teeth more or less brought into normal position, but with decay, not only in the anchor teeth where the bands have been attached, but also in between the teeth where the ligatures have been, even on the labial or lingual surfaces of the incisors where the arch has touched them?

This, of course, should not happen, and I consider it as a great fault of the orthodontist if it has happened, for in the first instance it proves his shortcomings not to have been able to convince the patient sufficiently of the necessity of a careful mouth hygiene, which is the first and greatest duty of every practitioner; but it is his fault that he has not refused further orthopedic treatment and removed his appliances when he sees that the patient does not obey his warnings.

“A clean tooth never decays” is an axiom, but it is not always possible practically to keep the teeth absolutely and perfectly clean; and we need a remedy which not only assists us in the cleaning process, but which is also able to cure if superficial decalcification has taken place already.

The solution of this problem is still very difficult, as we have not come yet to an exact knowledge of the biologic processes which take place in the enamel

*Proceedings of the European Orthodontological Society.

and of the chemico-vital process of dental decay, although I believe that in the last few years we have come a great deal nearer to the solution.

I might mention here the investigations of Pickerill and others into the processes which take place in the enamel after eruption of the teeth, the normal posteruptive hardening of the enamel by penetration into it of mineral salts from the saliva, and of the investigations and elaborate experiments of my friend, Dr. V. Andresen of Copenhagen, of the possibilities of remineralization of the enamel.

To go into details about the theory of this question will bring me too far—and my intention with this paper is only to call your attention to the results which already have been obtained by the untiring efforts of Andresen of creating a rational remedy as a prophylactic against dental decay—results which already have been so successful that I believe that today we are standing on the threshold of a revolution concerning the prophylaxis of caries. The practical results which I personally and others with me have obtained, give me the right to say so.

The principle on which this remineralization method is based is to raise, by artificial means, the concentration of the mineral salts which normally are dissolved in the saliva, and in this way raise the normal hardening process of the enamel, which process takes place by diffusion into it of the mineral salts.

A great number of laboratory experiments on not fully developed teeth or teeth artificially superficially decalcified, gave the proof of the possibility of this recalcification, which later has been confirmed by experiments *in vivo* on superficially decalcified teeth.

The illustration which I pass around will probably interest you. Three tooth-germs of a pig have been split and the three halves have been artificially mineralized. After this treatment all six pieces were stained in a solution of fuchsin for some time and photographs taken. As you see, there is a great difference in the color. The mineralized pieces are harder and have not absorbed as much of the fuchsin as the other. The weight has also increased after mineralization, and there is a difference in resistance to the penetration of x-rays.

For these experiments but also for the practical use in the treatment of patients for prophylaxis, Andresen advises a powder composed as follows:—

Acid. tartarie, 90 grams; sol. gelatin. alb. 10 per cent, 10 grams; mix and add phosphat. calcie. precip., carbon calcie. precip., carb. magnesia, 32 grams of each; mix and dry, then add salt, 32 grams; bicarb. soda, 112 grams. Keep in a bottle.

When this powder comes in contact with water or saliva a formation of carbonic acid will immediately take place. This acid will dissolve a part of the different salts and the solution of the mineral salts in the saliva will become more concentrated. The undissolved part will form an effervescing mixture of salts, very effective as an agent for the removal of the mucous and calcarious deposits on the teeth. The carbonic acid has, besides its function as a dissolving agent, also an important stimulating influence upon the normal secretion of saliva and on the normal blood circulation in the gingiva, combined with anti-

septic properties, all being properties of importance for a rational prophylactic tooth-powder.

The daily use of this powder as a prophylactic is quite simple. The tooth-brush must be moistened a little and the powder, which always must be kept airtight in a bottle, otherwise it will decompose, must be poured over the brush and the teeth brushed in the ordinary way—that is to say, not the ordinary way of the patients, but vertically from the gum over the teeth, etc.

Although the experiments are not yet finished and therefore it is possible that later on we will get even a better composition, the practical results with this and other compositions have been so successful in my hands that I am really quite satisfied.

Since 1919, when Andresen initiated me in his work, I have used this remineralization method as a direct remedy in special cases and as a prophylactic with hundreds of patients, and I feel inclined to report in short a few cases just to show the scope of this method. In these reports I have only taken into consideration those special conditions which are of interest in judging the value of remineralization; and mostly I have chosen cases which have been under my control for years, with patients who formerly have been instructed about good mouth hygiene, etc.

CASE 1.—Miss F. P. (age twenty-five years).

March 29, 1917. State of health in general: normal. General condition of teeth: fairly good, enamel normal. General condition of gingiva: extensive recession labially by all incisors and premolars. Mouth hygiene: good. Special conditions: intense sensitivity of denuded dentine.

September 25, 1919. Patient still complained about the sensitivity of her teeth when brushing, and eating sour, salt and sweet foods. No cavities. Remineralization powder described; used twice a day.

July 30, 1920. No complaints whatever. Sensitivity fully disappeared.

CASE 2.—Mr. P. H. de G. (age forty-five years).

August 8, 1917. State of health in general: normal. General condition of teeth: bad, extensive decay. General condition of gingiva: chronic gingivitis. Mouth hygiene: bad. Special conditions: the labial surface of maxillary incisors rough and opaque, superficially decalcified and soft.

May 26, 1921. General condition of teeth: better, still new cavities. General condition of gingiva: slight gingivitis. Mouth hygiene: since 1917 good. Special conditions: appearance of enamel on incisors unchanged. Remineralization powder prescribed.

July 2, 1922. General condition of teeth: good, for the first time no new cavities. General condition of gingiva: normal. Special conditions: none. The enamel on the maxillary incisors hard, smooth and glossy. No traces of decalcification.

CASE 3.—Mrs. K. P. (age thirty-eight years).

December 7, 1921. State of health in general: delicate, anemic. Patient is recovering from a severe illness (osteomalacia during pregnancy). General condition of teeth: bad, extensive decay. General condition of gingiva:

normal. Mouth hygiene: good. Special conditions: the enamel of all the teeth is very weak, with a great number of white superficially decalcified spots. Appearance milky. Patient claims that her teeth changed very much during her illness.

January 3, 1922. General treatment of teeth started. Remineralization powder prescribed; use three times a day, each time three minutes.

May 30, 1922. General treatment finished. The enamel is hard, smooth and glossy and looks, even under magnifying glass, normal. Color: yellowish white.

CASE 4.—H. H. de G. (age ten years).

March 21, 1917. State of health in general: normal. General condition of teeth: good. General condition of gingiva: normal. Mouth hygiene: fairly good. Special conditions: position of teeth irregular.

May 5, 1920. Patient returns after an unexpected absence of several months, without having consulted any dentist, notwithstanding he wears a regulating appliance. The lower arch, to which the incisors and canines are attached with a silk ligature, is still in the mouth. After removal of the appliance all six teeth show very marked decalcification where they have been in contact with the silk ligature. Immediate remineralization, after cleaning with ether, during thirty minutes. Remineralization powder prescribed; use twice a day, each time three minutes.

October, 1920. No traces of decalcification.

July 13, 1922. Ditto.

CASE 5.—Mrs. V.-H. (age forty years).

Fall 1918. State of health in general: normal. General condition of teeth: very bad, color bluish white. General condition of gingiva: chronic gingivitis. Mouth hygiene: unsatisfactory. Special condition: extensive sensitivity of teeth and gingiva. Patient declines treatment.

May 4, 1921. Patient returns for treatment. The condition of the teeth and gingiva still worse. Pyorrhea alveolaris of mandibular incisors. On account of the sensitiveness normal food can hardly be eaten.

September, 1921. Remineralization powder prescribed.

December, 1921. General treatment almost finished. Sensitiveness considerably diminished. No pyorrhea and no gingivitis.

March, 1922. Patient claims that the teeth are just as sensitive as before treatment. Slight gingivitis. Admits not having followed my instructions. Remineralization powder again prescribed.

July 5, 1922. Sensitiveness totally disappeared. General appearance of teeth good. Color yellowish white. Gingiva normal. No pyorrhea.

As a summary of my experience with this remineralization of the enamel and dentine, I might state the following. It has proved to be excellent for the treatment of superficial decalcification of the enamel and sensitive denuded dentine, a valuable remedy for the treatment of gingivitis and pyorrhea alveolaris on account of its stimulating influence upon the soft tissues, and last, but not least, on account of these curative qualities, combined with its cleaning

properties when used as tooth-powder, a rational and effective prophylactic against caries.

Contraindications against its use there are practically none, and it can be used by patients of all ages, even by small children. The only exceptions, as far as my experience goes, are those with stomatitis ulcerosa and other similar ulcerous diseases of the mucous membrane in the mouth or the gingiva, when the carbonic acid will irritate too much.

One warning, though, will not be out of place: the powder must be very carefully made, exactly following the prescription, otherwise, when the different substances have not been dried sufficiently, a slight explosion might take place when the cork of the bottle is removed.

The many and important advantages which the use of this powder as a prophylactic has, compared with other remedies, are so obvious that I feel sure the whole dental profession—including the orthodontist, who beside his orthopedic treatment also has a mission as a dental hygienist towards his small patients—when they with their own eyes have seen the practical results of this method, will be highly indebted to Andresen for his pioneering, untiring, often misappreciated scientific investigations and work for the solution of the problem of composing a rational and effective prophylactic against caries dentium, the most widespread of all diseases which civilization has brought us.

DISCUSSION

Dr. E. D. Barrows thought the powder of which the formula had been given was the thing that all dentists were looking for. Many patients now came with white spots, and many with sensitive dentine, and it seemed to him that the powder would be of great benefit, as Lind had found out really what had taken place on the enamel, the chemical action in cases where the enamel had become very thin and the dentine nearly exposed. He should like to know whether it exposed the tubuli of the dentine or formed a new layer.

Dr. Lind said when the powder came in contact with the water of the saliva the acid acted as an effervescent, and carbonic acid was formed. The carbonic acid dissolved part of the different salts and in that way there was a higher concentration of the salts. The same salts were found in solution in normal saliva. There was really an inorganic substance in amalgamation with organic, that was to say there was a diffusion into the enamel of a highly concentrated solution of mineral salts, which was called pseudomorphosis.

Dr. A. Chiavaro congratulated Dr. Lind on his most interesting paper. He had been trying to use tartaric acid in some other solution and he found that tartaric acid in the mouth, used as a mouth-wash, had been of some good. He hoped next year to be able to bring up a report on the subject. He agreed it was possible to remineralize the teeth from outside, and not through the blood as was generally considered the only course.

Dr. P. J. J. Coebergh said it was a very good idea on the part of the president to bring the matter before the society. Andresen had made some practical investigations in connection with the matter, and Professor Rodman, of Leipzig, one of the best dental investigators, had shown in a large series of investigations the absolute possibility of remineralizing the enamel, and believed from his investigations that it might be possible by a certain composition to remineralize the enamel from outside. The matter was, therefore, not only founded on experimental investigation but had also been put forward by a good theoretical investigator on the theoretical side. He congratulated Lind on his paper and

considered it necessary that the whole dental profession should try the method and give their own views on the result of the investigation.

Dr. J. T. Quintero said he had been greatly interested in listening to the paper because it gave a new formula slightly different from the one which he used, which Lind had given him about a year ago. The principal difference was the addition of the gelatine solution. The formula which Lind had given him last year he had tried on various occasions, and had used it perhaps more intensively than Lind had, because he made his patients use it as a tooth powder three times a day, and then apply it to the teeth on a little roll of cotton wool for five minutes three times a day after brushing their teeth. That was perhaps very intensive remineralization, but he had had very good results from it. In two cases in particular he had seen white spots on the enamel almost entirely cleared away within six months, and in another case a young patient whose teeth were very sensitive about the necks had been made very much more comfortable, and he had been able to use ligatures on the teeth without causing any pain at all.

Dr. W. S. Davenport said he had no experience of the matter except that as a critical observer he oftentimes found that, in polishing, the things referred to disappeared and he imagined he had done something which he had not really accomplished. It was simply a question of getting the patient in the habit of cleaning the teeth and then the sensitivity disappeared. Personally, he believed in remineralization, and was open to conviction. There were probably nerve centers in enamel, and it might be discovered in time that Nature could bring about the work of restoration herself, although he did not know whether there was very much in that theory.

Dr. F. L. Stanton said the possibility seemed to him to be plausible from the one experience which he had had where teeth were naturally remineralized. A patient came from a distant city who had been wearing retaining bands on the maxillary incisors for some time. The bands had become very loose, and when he took them off the whole surface of the teeth was chalky, and he was very much disturbed. He saw the patient a year or two afterwards and the substance of the teeth was then apparently normal and it seemed as if the enamel had been restored. He thought it was purely a thing of his imagination. It would be a great boon if the white spots could be cleared up, and he was going to try the method that had been suggested. If it was true, he would be very well repaid for the time and trouble he had taken in crossing the ocean.

Dr. Oscar Amoedo (of Paris): The problem of remineralization of teeth presented to us by Lind is one of the most interesting in regard to preventive dentistry and once again it proves the altruistic mission of our profession to humanity. In France, Dr. Paul Ferrier called our attention, at the Congress of Tuberculosis in 1905, of the coincidence of dental caries and tuberculosis in demineralized patients. Ferrier established a method of recalcification, and now in France there are many recalcifying products as calcine, tricalcine, ostéine, and chaux colloidal. To my mind the best way of remineralization must be found in the daily diet. There are foods that we must advise, and others that ought to be prohibited to mothers and children specially in the early years of childhood. Favorable foods are: good natural water rich in calcium phosphate, all kinds of cereals, brown bread, and herrings. We must condemn white bread as they eat in London, boiled water and sterilized milk by methods that precipitate mineral salts, as has been pointed out by Dr. Berrelier at the Academy of Medicine of Paris. Evian water must be prohibited at the prenatal period of the child and during the tooth formation. This water is deficient in mineral salts and is indicated only to adults suffering from hypercalcification. Dr. G. V. Black was called to find the cause of dental decay in a town of the Rocky Mountains, U. S. A., and he discovered that the alimentary water of the country was very poor in mineral salts. We know that people who drink water coming directly from ice mountains have very poor teeth, and many of them are suffering from rickets and thyroid trouble; this is the case in Tyrol and Dauphiny. I have observed a case of a patient of mine who was at the front during the war. He presented at the time many soft decayed teeth.

After the peace he went to Morocco, where he used to eat couscous and brown bread. Two years later he came back with very strong solid teeth and no more decay. Now about the acid prescription of Lind: I remember that Dr. Wallace advised us to end the children's meals with an acid fruit, such as an apple, but he did not explain the chemical reason as Lind did today.

Dr. T. C. A. Böger agreed that the best way out of the difficulty of having bad teeth might be to choose another way of living, but that, of course, was very difficult as it was not very easy to change one's food and it was difficult to change the habits of a household. The treatment suggested by Lind partook rather of a magical character. He had doubts about it, but he felt it would be easier even to apply a medicament of the character mentioned than to change the whole present method of living.

Dr. Lind, in reply, asked Davenport to try the method because he would be surprised at the results he would obtain. After the powder had been used for some time it was surprising to see how the white spots would disappear and the enamel become quite hard and look absolutely normal. New salts were brought in and created bone in the enamel, if he might so term it. It had been absolutely proved by laboratory experiments. The three split teeth he had shown on the screen were treated with the powder and the weight was taken before they were treated and afterwards, and it was proved that they were considerably increased in weight, and also their resistance against pressure, etc., was measured and found to have increased. With regard to the question of Amoedo in reference to foods, the principle which Dr. Sim Wallace had brought forward in London was quite right, and the action of the powder was similar to the action produced by eating apples. The formation of carbonic acid had a stimulating influence upon the secretion of saliva, and with the higher secretion of saliva there were more mineral salts produced and the normal rehardening process went on much better. It was for that reason that Sim Wallace advised the eating of fruit after a meal.

A PUBLIC HEALTH TALK*

BY MARTIN DEWEY

THE most valued asset of a nation is the health of its people. It is important that every one should do all he can to conserve his health. It is imperative that parents should take special care to conserve the health of their children.

In the study of health, we find that no one thing has been so responsible for the life of the people as have the teeth. In the study of animal life we learn that the teeth are the most used of all organs. Various forms of anatomical structures are present in different animals, but these structures present many variations and uses; however, the teeth are always found to be present regardless of the habits or nature of the animal. In man, the teeth have played a very important part in the development of the human family, and are significant factors in the health of the race today.

The teeth were brought into function, primarily, for the purpose of securing and masticating food. This may seem but an insignificant statement from a health standpoint, but when we remember that good health and, in fact, life itself, depends upon our food, we may realize that the proper function of the teeth play a great rôle in the health of a nation.

*Broadcast from KFRU, Bristow, Okla., under the auspices of the Southwestern Society of Orthodontists in Annual Session at Tulsa, Okla., April 8, 1925.

In order for the teeth to be of the most use in preparing and securing the food, so that it can be assimilated by the body, the teeth must occupy a proper position in the jaws and a correct relation to one another; they must also occupy the proper position in relation to the face and cranium. We see faces that are beautiful and others that are not so pleasing, but it must be remembered in the study of beautiful faces, that the teeth as a whole contribute more to the beauty of form than does any other part of the face. Some people are inclined to believe that the eyes are the greatest objects of beauty, but it is only when we have the proper development and contour of the face that the eyes become attractive and the shape of the face depends upon the form and position of the teeth. Malposition of the teeth does much towards marring the beauty of the face, and as unpleasing and inharmonious as some faces may be as a result, lack of beauty is only a minor factor when we consider the great harm caused by the inability to properly masticate the food. The improper mastication of food, associated with malocclusions, opens up a chain of circumstances which have far-reaching and disastrous results. Very often children are brought to us for treatment because of some slight variation in the position of one tooth and the fond parents insist upon the correction of this deformity for the sake of beauty; but the more serious condition produced by malocclusion of the teeth and the effects on the constitution of the individual is overlooked, and the parent is somewhat surprised when we insist upon the treatment of the deformity as a health measure.

Malocclusion of the teeth is a scientific term used to denote the variations in the position of the teeth to such an extent as to interfere with the functions. It must be remembered that any deviation from the normal is going to interfere, not only with the function of the teeth, but that disturbances so caused will result in an abnormal development of the parts, which, in turn, will also have an ill effect upon the health.

Malocclusions of teeth are very common and are increasing. This increase is due to the fact that people are not eating the proper food and consequently the teeth and their supporting structures do not receive the correct use and stimulation. The food, also, is deficient in nutrition and consequently the individual suffers from malnourishment. Malnourishment or malnutrition again interferes with the growth and development of the individual, which means that we have a child below par and malocclusion has been one of the primary factors in this vicious chain of circumstances, and will continue to be a handicap during the entire life of the individual unless the deformity is corrected.

We have already mentioned that improper food, lack of use of the teeth; and malnutrition result in the abnormal development, or rather underdevelopment of the supporting structures of the teeth, which may be described as the bones forming the face. We, therefore, find that people suffering from malocclusion do not masticate properly and another serious condition occurs because the disturbance of the teeth and their associate structures have an effect upon the development of the nasal cavities, which may result in the mouth-breathing habit. It is a well-known fact that people who cannot breathe through the nose are more prone to contract all kinds of diseases than the in-

dividual who is a normal breather. A great many of these nasal disturbances can only be corrected when the malocclusions of the teeth are taken care of.

Malocclusion of the teeth is one of the greatest contributing factors to ill health, because so many conditions occur that are closely and intimately related to one another. Malocclusion of teeth is the most common cause of pyorrhea, which is characterized by loosening of the teeth and a flow of pus.

This disease in itself makes proper mastication of the food impossible, and the food eaten by the patient is constantly mixed with pus and germs from around the teeth. The patient, therefore, suffers not only from the original condition of malocclusion, but is now a victim of poison from the by-products of the disease, and the chain of symptoms can only be eliminated by treating the original malocclusion. It is universally recognized by the medical profession that many serious diseases have their origin in focal infection, which may be described as a collection of germs in the bone which surround the root of the tooth. These foci of infection are always the result of the teeth and a large part of tooth decay is primarily caused by malposition of the teeth because anyone suffering from malocclusion cannot properly brush the teeth. One of the greatest measures for the elimination of focal infection and the results of that condition, is the correction of malocclusion, thereby removing the primary cause of the pathologic condition.

Malocclusion of the teeth contribute more to the ill health of the human family than any other one factor. The deformity of the teeth with its accompanying ill effects is a causative factor in the development of systemic conditions, which, at first, may seem harmless, but later become very serious. Deformities of the teeth and jaws make their appearance early in the life of a child only as a small variation, but they continue to become worse as the individual grows older and each year the evil effects become more noticeable and increase the state of ill health. Malocclusions should be corrected as soon as they are discovered, and the parent who wishes to do the greatest good for the child, will see that the youngster receives the proper orthodontic treatment as soon as any deviation from the normal is observed. If the child is given the proper attention, the correction of the malocclusion will result; the child will develop a normal and beautiful face, and the improvement of the general health will have the effect of producing a long and happy life.

A SUMMARY ON THE ORTHODONTIA SECTION OF THE AMERICAN DENTAL ASSOCIATION MEETING AT DALLAS, TEXAS*

BY T. WALLACE SORRELS, D.D.S.

THE Orthodontia Section opened with a good attendance made up largely of orthodontists. Chairman Dr. William C. Fisher called the meeting to order and surrendered the chair to the Vice-chairman while he delivered a short address. Dr. Fisher, in his usual stanch and pointed manner, related in a comparative way the orthodontic situation in the United States and in some of the European countries which he had only recently visited in the interest of the International Orthodontia Congress which will be held in New York in 1926. While the War and its effects have retarded the progress of orthodontia in Europe, it has continued to make wonderful progress and growth in the United States. This has been especially noticeable the past five years. Not only have the orthodontists increased rapidly in number, but several sectional societies have been organized which are doing valuable work in furthering the cause of orthodontia. Dr. Fisher attributed orthodontia progress in the United States as being largely due to its having been principally taught and practiced as a distinct specialty of dentistry. It was his further opinion that dentistry and orthodontia had been greatly benefited as a result. Attention was called, however, to the fact that this tendency on the part of the general practitioners to push orthodontia out of the way on dental society programs and the corresponding tendency on the part of specialists in orthodontia to pull away from general dentistry too far was sure to have a bad reaction on both general dentistry and orthodontia service. This was a direct appeal for a closer interrelationship and a better understanding of the many things of common interest and benefit. He admonished the man who would be a conscientious dentist not to attempt the correction and treatment of any of the more severe types of malocclusion unless specially qualified to do so. Dr. Fisher further pointed out, in his address, that orthodontia was a democratic specialty and orthodontists should be glad of any opportunity to assist those seeking more knowledge in this special line.

Orthodontia was duly recognized as a progressive science and closely allied with many of the other arts and sciences of both medicine and dentistry in the essays which followed. They were all live and important subjects of this day and time. While they were closely related, each displayed an entirely different individuality in construction and treated the subjects along different lines of scientific thought. To discuss one makes it almost necessary to infringe upon another. While one topic may seem quite foreign to another, it is a splendid illustration of the interrelationship of all subjects pertaining to orthodontia.

Before discussing them singularly, the writer cannot let this opportunity go by without a few words of commendation on all of them. He was impressed

*Reprinted from the Bulletin of the Oklahoma State Dental Society, February, 1925.

with the sane and logical reasoning of all the essayists in their several lines of scientific thought. They bore true evidence as coming from those not given to advancing fanciful theories, but rather sound, reasonable, scientific facts of practical application.

Dr. Oscar E. Busby read a paper entitled "The Orthodontic Sphere" and cited in a brief but forceful manner the serious need for a better understanding of biology, histology and physiology in dealing with the etiology of malocclusion. It was pointed out that the correction of malocclusion by the means of orthodontic appliances was to be recognized as only one of the modern and practical processes of reestablishing harmonious facial lines and normal functional activity. Malocclusion was treated as a symptom of some underlying heredity, systemic, or local factor which interrupted the functional activities of growth and development. These factors should not be disregarded in the prevention and treatment of malocclusion and facial deformities.

Dr. W. E. Flesher in a very interesting way discussed the relative influence of dentition upon the growth and development of the face and dental arches. His paper was hinged to this question, "Why are so many cases of malposition of the teeth discovered at about the twelfth year?" For illustration, a normal child at birth was taken down through the years as a possible victim of environment. When he had finished, all who listened had the answer. Here again were the detrimental factors to normal growth and development operative and evident in producing a faulty relationship of the dental arches and teeth at so early an age as eighteen months. Briefly, they have become so conspicuous after the eruption of the canines and premolars that they are very easily recognized. Undersized dental arches at five years, with no disharmony in the relationship of the arches, are rarely looked upon with disfavor. It is, however, wise to assume that if the dental arches are much below normal in size at five years they will not broaden sufficiently, unassisted, to receive the permanent teeth in proper alignment. Knowing as we do, that it is necessary to produce growth and obtain harmony in size and shape of dental arches, is it not logical to assume that orthodontic treatment should be undertaken at an age when the physiologic processes of growth and development are most active? This period of time, from an orthodontic point of view, would be from the fourth to the tenth year.

Dr. T. G. Duckworth in his paper "The Reason for the Existence of an Orthodontic Specialty" very ably reviewed orthodontia progress with its past and present problems. He attributed the present status and existence of the orthodontia specialty to the early pioneers who were brave enough to cut away from general practice and give their entire time and attention to the development of orthodontia. The many thousands of children destined to go through life physically and mentally handicapped for the want of orthodontic treatment was another good reason advanced for its existence. If necessity is the mother of invention, doubtless the great need for orthodontists was perhaps the prime factor in producing the specialty of orthodontia. It is no longer considered necessary for an orthodontist to be located in a large city to successfully practice the specialty. It has been demonstrated that towns of about ten

thousand and upward in population will substantially support an orthodontist. Appliances came in for their part in orthodontic progress. The recent advances made along this line are proving a real economical factor in orthodontic treatment. As a result of less working time and the diminishing of the number of visits during the course of treatment the orthodontist is enabled to care for more cases at one time than formerly. The object and aid of "Orthodontia" was expressed in words from a paper read before the American Orthodontia Society by Dr. Ralph Waldron as being, "To make growth more perfect, decay less rapid, form more beautiful, living more enjoyable, life more vigorous and death more remote."

Dr. Charles R. Baker's "Consideration of the Correct Time for Orthodontic Treatment," was an old subject discussed by the essayist in a new and masterful way. He introduced, for convenience of study, diagnosis, and prognosis, a classification as to age which met with great favor. They were classified as follows:

Group A.—Three to six years old. Deciduous teeth only.

Group B.—Six to eight years old. Period of eruption of permanent first molars and incisors.

Group C.—Ten to eleven years old. Period of eruption of the premolars.

Group D.—Twelve years old. Period of eruption of permanent second molars and canines.

Time of treatment was considered more favorable down the scale of years. A very satisfactory and opportune time, however, to treat malocclusion and facial deformities was recommended as being during the eruptive period of the permanent teeth as successors to the deciduous teeth. To wait until after the canines and premolars have completely erupted is to wait until the case has become about as bad as it possibly can get before starting treatment. It is found that orthodontia intervention works more perfectly in coordination with the natural activities of growth and development at the earlier periods.

Dr. James D. McCoy's paper on the "Question of Speed" was a splendid contribution to the program. Dr. McCoy is one of those so-called "straight shooters." He is, if you will permit of a homely expression, a graduate of that old school "Common Sense." It is indeed gratifying to see so many matriculating in this school so easily within reach of all. Careful study and applied common sense with the dictates of our own conscience directing us will save many blunders in dentistry. Ordinarily such a subject would be of comparatively little interest if it were not for the fact that orthodontia is being jeopardized by those who would popularize and commercialize it. These false, misleading, and exaggerated claims of the orthodontia laboratories in advertising appliances and knowledge for sale to the profession is in many ways detrimental to the best interests of orthodontia and dentistry. It is, however, gratifying to know that the members of the profession, as they become more enlightened by experience and further knowledge, realize that orthodontia practices can never be successfully conducted by the mail-order and correspondence school

route. It is true there are some successful cases to be cited, but they are so relatively few in number as to be practically nil. Those who desire to treat malocclusion and dentofacial deformities without special postgraduate training can best serve themselves, their patients and dentistry to the best advantage by the use of a good modern textbook on orthodontia and the plain expansion arches. Ultimate success is further dependent upon proper retention and careful observation, as it is during this stage of treatment that probably an equal number of failures result.

Like those who deliberately violate our civil laws regulating speed, there are those practicing orthodontia who deliberately violate nature's laws in the process of moving teeth. Again we have the law of averages in growth and development to direct us. There is the variation of age in the relative amount of lateral, forward and downward growth of the bones to understand. For example a child with a normal arch at five years should measure approximately one and eighteen one-hundredths inches (1 18-100) laterally from the lingual at neck of right and left second deciduous maxillary molars and shows a lateral growth of six one-hundredths (6-100) inches in two years and remaining normal. It would be but natural to assume that about the same amount of time should be utilized at this age with the child in good health to gain this amount of development for the establishment and maintenance of normal occlusion. This example will in a measure further explain to the thinking individual why it is so necessary to carry these cases so long under retention and observation as well as consuming considerable time under active treatment.

The space allotted will not permit of a review on the discussion of these papers. Nearly all those on this part of the program had previously prepared their discussions in the form of treatises and were read. Two capable men quite thoroughly discussed all the principal points brought out in each paper. This plan appealed to the writer as being much better than having the usual large number of extemporaneous talks.

A PLAN FOR DENTAL EDUCATION

BY GUY S. MILLBERRY, SAN FRANCISCO, CALIFORNIA

THE practice of dentistry can be and is being divided into several grades of service. It is both unnecessary and economically undesirable to educate all persons to qualify for the highest forms of dental service.

The following plan is proposed to meet the present conditions and provide for future needs without abrupt changes and their consequent effects during the transitory period. The plan also makes it possible to unite all branches of dental service into one vast, correlated unit through national, state and local organizations, thus avoiding the confusion and chaos which medicine has been and is now experiencing in the solution of its educational and professional problems.

The educational chart illustrated is designed to illustrate graphically present and proposed levels in general and professional education. In this plan "I" corresponds to "X" on the educational chart, "II," "III," and "IV" correspond to "Y" on the educational chart "V" corresponds to the column the designation "Technical" and "VI" and "VII" correspond to the left hand one of the three columns under the designation "Professional." Discussion in the field of medical education at the present time seems to indicate that a six year program with one year of internship should prevail, as shown in the right hand one of the three columns under "Professional," while the center column shows an eight year modifiable program.

The plan includes the training of

- I. Dental Assistants.
- II. Dental Hygienists.
- III. Dental Technicians.
- IV. Dental Radiographers.
- V. Dentists:
 - a. Bachelor of Science.
 - b. Master of Science.
- VI. a. Dental Surgeons.
b. Orthodontists.
- VII. Dental Research Workers and Teachers.

Other less well-known, self-created types, such as periodontists, pedodontists, prosthodontists, exodontists, are not mentioned though the education of such when deemed necessary can be included in this plan.

The plan also includes a certification of groups II, III, IV, and the granting of degrees to V, VI, and VII of a different order from those now prevailing in dentistry.

I. Dental Assistants: These persons, preferably women, may be trained in vocational schools or dental colleges. The introduction of certain dental courses in the curriculum of vocational schools would permit such persons to receive a training which would enable them to render a better service to the public and command better salaries for such service than now prevail. It is unnecessary to add such courses to standard high school curricula in our secondary schools since the proposed training is purely vocational and has no preparatory academic value.

There are no opportunities at present for the acquisition of such training, except in dental offices where the cost of training is greater. It is always borne by the public.

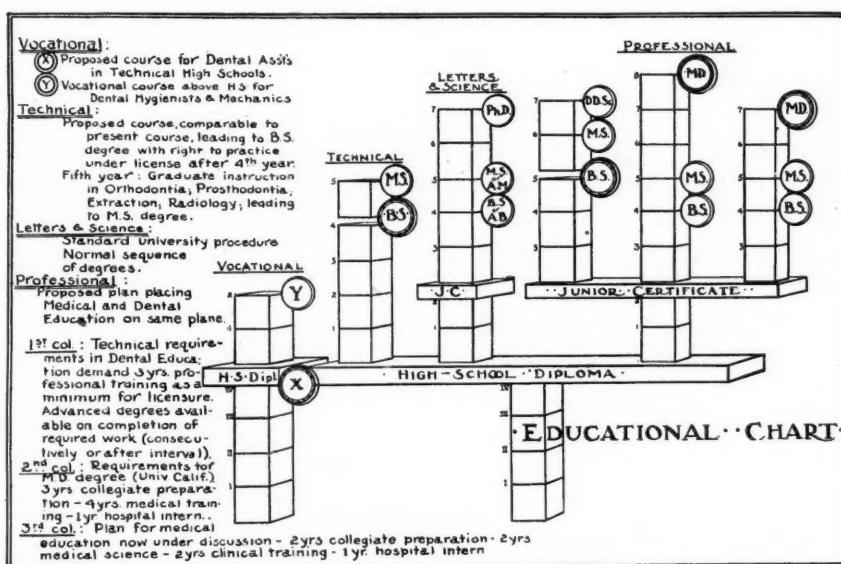
The average length of service in this field of endeavor is about two years and the value of the training and experience to the individual is manifested by a better knowledge of health, sanitation and economies. Contact with the public develops poise, character and interest in civic life.

The American Dental Assistants' Association was organized in Dallas, Texas, in November, 1924.

The succeeding groups begin their study at the base-line normally spoken of as graduation from a standard high school.

II. Dental Hygienists: These persons should be high school graduates and should receive a course of training in dental colleges or in dental dispensaries, the only places where it is now available in various parts of the United States.

Their general education should include some pedagogy, public speaking and child psychology, as well as the strictly professional subjects and the practice should include the removing of stains and accretions from the exposed portions of the teeth and polishing them at periodic intervals. Their work is divided into two parts: (1) the training of the public, especially children, in the practice of mouth hygiene, and (2) the practice of mouth hygiene or the cleaning of the teeth of individuals. It has been found that the most satisfactory results have been obtained by coupling professional service with personal instruction, hence the necessity for both.



It is universally conceded that this is one of the most important phases of personal hygiene and preventive dentistry. Twenty-six states have made provision for this service by the enactment of legislation placing the dental hygienists under the direction or supervision of licensed dentists.

The American Dental Hygienists' Association was organized in Cleveland, Ohio, in September, 1923.

III. Dental Technicians: These persons have until recently acquired their training as apprentices in the laboratories or in one of the few trade schools usually designated as schools of mechanical dentistry. After the Armistice, when the vocational rehabilitation idea was dominant, a number of dental colleges at the request of the U. S. Veterans' Bureau established courses of instruction for this type of student. In some instances civilian students were admitted on the same basis.

The training period varied from a few months to two years and the results varied correspondingly. With no age limit and no scholastic requirement for admission it soon became apparent that a definite scholastic and

technical standard could not be maintained and with few exceptions the dental colleges discontinued their instruction leaving the field open in many localities to private schools.

There is a definite need for this type of person. He can be trained sufficiently well in two academic years to perform most of the technical operations expected of him, which are limited to laboratory work on inert matter. The subjects he must study are few and are confined to a narrow field.

Special provision should be made in the statutes for the licensing of dental technicians, defining their duties and limitations and protecting the public against unscrupulous and incompetent dental laboratory service arranged for, by or through dentists of like character. There has been a sporadic effort made in some states to permit untrained dental technicians to practice lawfully certain kinds of dental service on patients. This step would be the first to break down the protective legal system which safeguards the public against incompetency in dental practice.

There are a number of local and state associations of dental technicians, some of which are recognized by or affiliated with state dental associations. At the meeting of the American Dental Association, in Dallas, Texas, in November, 1924, the president of the American Dental Laboratories Association outlined a plan for a national association.

IV. Dental Radiographers: These persons at present usually acquire their knowledge and experience through a brief apprenticeship system, with some reading or study. Many, however, enter the ranks through such channels as schools for nurses, hospital x-ray service, x-ray equipment agencies or from the public at large through the stimulus of quick returns on a small investment because no general statutory requirements exist regarding this practice.

The hazards involved, including the loss of life, demand that some form of training and licensure prevail in order to protect the public against the incompetency and ignorance of a large number of dental radiographers.

Two years of academic instruction with laboratory practice would be adequate to qualify individuals to perform all routine technical procedures. This would not include treatment, diagnosis or interpretation. Such persons should be employed as assistants under the direction or supervision of competent professional men.

V. Dentists: (a) It is quite generally conceded in the dental profession that the largest part of dental service rendered today is reparative and is rather simple in character, demanding only a general knowledge of medical science and a high degree of technical skill.

These qualifications are fairly well represented in the dental profession of today. Thus far no universal indictment of the profession prevails regarding its competency to perform the average dental operation.

Until such time, if ever, as the requirements of dental practice in each of its phases demand a longer period of training to prepare the individual adequately for practice it seems to be economically unwise to insist that *all* persons be required to comply with such higher requirements as are now demanded. If 80 per cent of dental practice consists of repairing or replacing

lost teeth or parts thereof, of simple extraction and mouth hygiene, why train persons longer than is required to teach them to render such service? Practically all dental service now rendered in America is done by persons who have had not more than four years of training; in the majority of instances, less.

This plan then proposes to continue the present four year course of study with such modifications of the curriculum as from time to time are deemed expedient and, at the conclusion of such a course of study, to grant the degree of Bachelor of Science. This will represent the irreducible minimum of preparation for the practice of dentistry without supervision or direction. The training and degree are by analogy comparable to engineering courses, or courses in chemistry, agriculture and some courses in architecture, after which men may engage in vocations in which public welfare and even life itself are involved.

The graduate will be eligible to sit for the licensing examinations given by State Boards of Dental Examiners and, on passing such examinations, will be permitted to practice general dentistry. In states where a degree requirement, as D.D.S. or D.M.D., is frozen into the law, the amendment of such laws is not an insuperable difficulty. The natural limitations of practice will be subsequently determined by experience until such time as they may be defined by statute.

V. (b) Many practicing dentists located in isolated districts for a few years with no professional contacts desire to receive additional instruction that will enable them to cope with either general or particular problems in practice and having earned enough money to continue their studies, voluntarily seek the opportunity for such instruction.

Others, recognizing their own deficiencies, will seek the opportunity to improve, as they now do, or will take advanced training in some special field in which experience has developed an interest.

At present but few dental schools offer such opportunities for either graduate work or postgraduate courses and these are often so remotely situated that the expense of travel, etc., is prohibitive.

For dentists desiring such work, supplementary courses will be set up in the principal fields of dental practice, such as (1) plate dentures, (2) crown and bridge work, (3) extraction and minor oral surgery,* (4) orthodontics* and perhaps (5) dental pathology, biochemistry or dietetics.

The year courses will include about half time instruction in any one of the above subjects as a major and the remainder in ancillary subjects of particular value to the major chosen. The latter may be available in the academic departments of the university or in the dental school.

At the conclusion of this instruction a Master of Science degree will be awarded to successful candidates and this will represent one terminal in the educational plan. Such students may not become candidates for the doctor's degree, except under conditions described under VI and VII, below.

Let it be understood that candidacy for higher degrees mentioned, i.e., Master of Science and Doctor of Dental Medicine, involves such preparation

*See reference under VI.

as is expected from candidates in other professional fields, like engineering, and that such candidates would come under the jurisdiction of the graduate division or graduate school of the university.

VI. Dental Surgeons: Certain classes of dental practice demand a much more thorough preparation than is now available in dental schools. Included in these, dental surgery and orthodontics are at present the outstanding types and each justifiably demands a change. Both require a better knowledge of the preclinical sciences and of the basic sciences, especially chemistry and zoology.

This plan proposes the establishment of a degree of Doctor in Dental Medicine, D.M.D., based on approximately seven years of university training. Admission to candidacy for such a degree will include two years of collegiate work conforming normally to the present two-year premedical requirement in many medical schools. Following this a four-year professional curriculum will be established differing somewhat from the curriculum established under V in that more advanced instruction will be given in the preclinical sciences and less technical work will be required. At the conclusion of this period a year of internship in a hospital or acceptable institution, or a year of research will be required before the degree is granted.

Students accepting this plan may, at an appropriate period determined by the completion of at least as many unit courses as are acceptable for the B.S. degree under V, receive the B.S. degree in course. If they have likewise complied with the licensing requirement they may become candidates for a license and if passed engage in the general practice of dentistry. Such persons may not then practice as dental surgeons or orthodontists unless the local statutes permit.

Under V, provision is made for the training of licensed dentists in (3) extraction and minor oral surgery and (4) orthodontist, leading to the master's degree. This is proposed as an expedient to supply this service until such time as a better knowledge of the exacting requirements of these specialties is better understood and more universally appreciated by the public and the profession. A sufficient number of partially trained men (better than the present system of training permits) will thus be available during the transitory period.

Ultimately those who have received the doctorate degree will be the only ones licensed to practice that particular specialty for which they are qualified by adequate preparation. This training shall be determined by study and experience and eventually defined by statute. At present such practitioners acquire most of their knowledge at the expense of their patients in these fields.

VII. Research Workers and Teachers: This field in dentistry needs a thorough study. At present the larger portion of this group, small as it is, has studied dentistry first and by choice has become interested in teaching or research afterwards. Dentistry is to be congratulated on having sustained its world-wide reputation in spite of such conditions.

The ideal condition in the future, however, demands that those who at the beginning of a career desire to fit themselves for a life work of this sort must pursue the proper course of study leading to that end. Others

who at a later period develop an interest in teaching or research may find an opportunity to pursue special work in either of these fields.

Aside from the particular scientific preparation which the choice of work may indicate, courses in philosophy, economics, psychology and language should be included. These courses should fulfill the requirements for the doctor's degree and appointments to positions should be based on the successful completion of this requirement, plus such other qualifications for the particular appointment as are essential.

In conclusion, the plan comprehends a division of dental service into such types as the tendencies of the past twenty years have indicated, with terminal facilities for each type that may be reached by those who for scholastic or financial reasons find it necessary to discontinue at a certain level. The plan also offers an opportunity for those who at a later time desire to acquire more knowledge to fit themselves for advanced responsibilities.

It also comprehends, first, a plan of bringing order out of chaos in this phase of professional education by correlating it with such other types as have existed for centuries in the great universities of the world with the respective and appropriate degrees in normal sequence, viz., the bachelor's degree at the conclusion of a four-year curriculum, the master's degree at the conclusion of the fifth year, and the doctor's degree at the conclusion of approximately seven years of collegiate study; and, second, a coordination of all dental service under one statute, in which the various types are defined and the qualifications therefor specified.

In 1922, the American Dental Association adopted resolutions permitting and encouraging a quasi-affiliation with other national associations such as the American Dental Hygienists' Association, organized in 1923, the American Dental Assistants' Association and the American Dental Laboratories Association, both organized in 1924. The purpose of these resolutions was to establish a greater solidarity among all groups engaged at different levels in every phase of dental practice and to elevate all the standards of public dental service.

The fact that practically 100 per cent of the people require some form of dental service twice a year and that no definite movement is being inaugurated toward developing its most important phase, i.e., preventive dentistry, justifies an economic as well as an educational study of the problem.

REPORT OF THE MEETING OF SOUTHWESTERN SOCIETY OF
ORTHODONTISTS, TULSA, OKLA., APRIL 8 TO 11, 1925

BY P. G. SPENCER, D.D.S., WACO, TEXAS

THE fifth annual session was the most successful meeting to date. Papers and clinics presented to the society will appear in an early issue of the *INTERNATIONAL JOURNAL OF ORTHODONTIA AND RADIOGRAPHY*. From the welcome address of Dr. J. M. Temples of Tulsa, until the departure of the Atlanta Special, carrying over twenty members to Clint's Atlanta meeting, everyone, besides enjoying a week of worth while papers and clinics, also enjoyed to the fullest, the Tulsa hospitality, as dispensed by Drs. McCarty, and Woodring, and the Tulsa Dental Society. Our program varied but slightly from the outline in the April issue of the journal. Outstanding papers were presented by Dr. Lehman, St. Louis, on "Regeneration of Bone"; Dr. Robison, on "Establishing Facial Muscle Functions in Treatment of Orthodontia"; Dr. C. V. Mosby on "Relativity of Orthodontists to Dentists and Laity." Dr. A. L. Walters very ably presented his paper on "Dietetics"; "The Dental Hygienists in Orthodontic Practice" was presented by Miss Blanche Doyle, and "Orthodontic Office Methods" by Dr. H. A. Pollock of St. Louis. We were particularly fortunate in having with us Dr. Dewey this year, who, besides presenting two papers, gave additional information in his discussions of papers; his efforts in assisting to make our meeting a success were manifested in many ways. The fact that his radio address on Thursday evening had been previously announced over an extensive area, made it possible for him to address the largest audience that has ever listened to a health talk from a dental standpoint.

Some seventeen table clinics were presented, a number of them featuring the lingual arch work, presenting the technic of Drs. Mershon and Oliver, with a number of appliances from Dr. Oliver's practice. A paper by Dr. Temples of Tulsa, presenting the views of the periodontists in regard to orthodontic treatment, and Dr. Busby's address on "Certain Views and Proved Ideas of Dr. A. Leroy Johnson," rounded out a program the value of which can scarcely be estimated.

As a relaxation, we enjoyed a round of golf, and our society is duly appreciative to the firms and individuals who generously donated prizes; through their kindness this part of the program was an entire success. One only needed to be present at the golf banquet to really understand the meaning of a good time, and to watch a reasonably sober crowd of good fellows at play. Besides the presentation of prizes and after-dinner speeches of merit, the entertainment features included everything from music to female impersonations, and all assisted "The Little Brown Jug" to bear up under the jokes which were included in this wild and woolly evening.

Dr. E. F. Woodring won the low qualifying cup, also the championship cup; these cups were donated and presented by C. V. Mosby, St. Louis. Dr. E. B. Arnold won the second low qualifying prize, a box of golf balls presented by A. P. Cary Co., and by finishing third in the championship flight, he won golf shoes presented by Pearce Dental Supply Co. Dr. H. B. Robison finished second in the championship flight, winning a hooded golf bag presented by Lavoris Chemical Co. Dr. P. G. Speneer finished fourth in championship flight and received a sweater and socks donated by the Corega Chemical Company. The first prize, Class B, won by Dr. O. H. McCarty, was a golf bag donated by Hettinger Bros. The second prize, won by Dr. R. H. Stewart, was a sweater presented by Julius Aderer Co. The third prize, won by Dr. T. W. Sorrels, was golf socks donated by J. W. Magee, Sporting Goods Co. In Class C, the first prize was a golf bag donated by Hotel Mayo and won by Dr. W. A. Murray. The second prize was one dozen golf balls won by Dr. Guy Gillespie. The third prize was golf socks, won by Dr. W. T. Chapman, Johnson Bros. Sporting Goods Co.

Visitors winning prizes were C. H. Hettinger, Dr. J. R. Caughron and Dr. W. E. Stoft all of whom won one-half dozen golf balls presented by J. R. Irwin Co. The highest score prizes were an impression trayhanger from Blue Island Specialty Co., and a gold cased tooth brush from the Pepsodent Co. which were won by Drs. L. S. Winston and R. D. Griffins. Long driving contest was won by Dr. O. E. Busby, "Horlick's Malted Milk." Table favors "See yourself as others see you" were also donated by Horlick. From an attendance which exceeded sixty in number, over forty engaged in the golf tournament.

Ninety per cent of the membership was in attendance, besides some fifteen or more visiting orthodontists and all sessions were well attended by the local dental and medical fraternities, who also assisted in the discussions of several papers. The society endorsed the plan of the International Orthodontic Congress for 1926, at New York and unanimously voted to assist in every way possible. Officers for the ensuing year were elected as follows: Dr. O. E. Busby, Dallas, President; Dr. Wm. T. Chapman, El Paso, President-Elect; Dr. P. G. Speneer, Waco, Secretary-Treasurer; new member of Board of Censors, Dr. H. B. Robison, Great Bend. Houston, Texas, was selected as the meeting place for 1926 meeting. Plans are already under way for the majority of the members with their wives to go by boat to the New York meeting following the close of the Houston meeting. We will be glad to have as many guests as possible, with their wives, make this trip. Full outline of the proposed plan will appear in this journal in ample time before the meeting.

CLINICS AND CASE REPORTS

CLINIC*

BY ALLEN SCOTT, D.D.S., SAN FRANCISCO, CALIF.

AN appliance to maintain space must be strong enough to stand very severe strain. There should not be rigidity and the appliance should not interfere with the eruption of the new tooth. Such a maintenance is shown in Fig. 1.

To Rotate a Premolar Without Having a Wire from Molar to Molar to Stabilize.—The molar has a half round tube, the shaft to fit this tube is soldered to an .030 wire which extends to the premolar to be rotated. The .030 wire has an .020 pin which fits a round tube on the premolar allowing rotation. On the

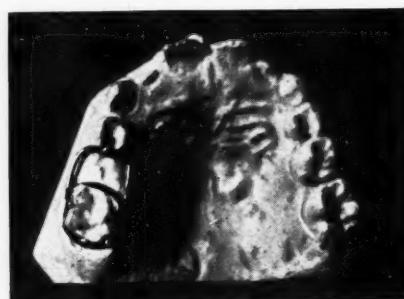


Fig. 1.



Fig. 2



Fig. 3.

buccal of the premolar is a hook for a rubber. This rubber extends to a hook on the main wire near the molar. The premolar can rotate, but the molar is stable. On left side of picture is an .020 wire spiral to cause rotation instead of rubber. (See Fig. 2.)

*Given before the American Society of Orthodontists, Kansas City, Mo., March 18 to 21, 1924.

To Aid in the Eruption of Impacted Canines After They have been Moved Part Way with the Lingual Springs.—Ligate them to the .030 wire which is soldered to the buccal surface of the molars. This wire has a turn or spiral which gives it more spring either buccally or downward. (Fig. 3.)

CASTING TECHNIC FOR INDIVIDUAL INCLINED PLANES*

BY FRANK A. DELABARRE, A.B., D.D.S., M.D., BOSTON, MASS.

BANDS are made for the maxillary centrals (and the laterals also in some cases) using 35-gage material, covering the entire palatal surface and at least one-half of the labial.

1. A piece of 40-gage is first swaged to the palatal surface extending under the gum margin; the band is then trimmed and pinched over this and assembled with it and soldered. Vertical labial tubes are soldered on.
2. With the bands on the teeth a modeling compound bite is taken with the mandible in the correct anteroposterior position, the median lines registering and with the determined amount of overbite.
3. Take a full mandibular impression.
4. Take a full maxillary impression with the incisor bands in place; (also the molar bands if a labial stabilizing wire or expansion retainer is to be used).
5. Place the waxed bands in the impression, pour and separate.

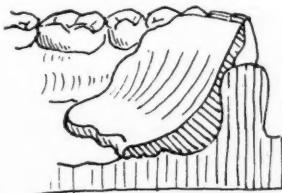


Fig. 1.—Cross section in median line of mandible, showing compound form in position.

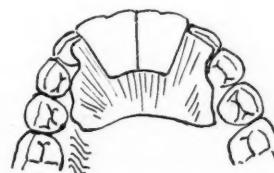


Fig. 2.—Showing wax pattern ready to assemble with the maxillary bands.

6. Trim the bite on both sides until only the impression of the cusp points remains, to insure accurate contact with the models.
7. Assemble the models with the bite and mount on an articulator or pour a core between them.
8. Separate, remove the bite, and shellac the anterior portion of the mandibular model labially and lingually and the palatal portion of the maxillary just at the back of the bands.
9. Remove the bands, burn out and pickle, and replace on the model.
10. Vaseline the shellacked portion of the mandibular model; place a piece of compound, the size of a walnut behind the mandibular incisors and with the thumb mould it to the incisor curve, and thin it to not over one-

*Presented before the American Society of Orthodontists, Kansas City, Mo. March 18 to 21, 1924.

sixteenth of an inch over the gum. Chill it; remove and trim the top edge so that the incisor edges stand one-sixteenth of an inch above it; with a curved knife edge trim the upper surface to this line in a smooth sweeping curve: this surface determines the lower surface of the plane and its angle in relation to the bands and the mandibular incisors.

11. Tack this in position on the mandibular model and vaseline the top of it and the incisor teeth and also the maxillary model behind the bands.

12. Warm a piece of 22-gage casting wax; press it on to the compound form and against the labial surface of the incisors.

13. Trim off the labial excess to within one-eighth inch of the cutting edges. Then trim the wax to its determined shape lingual to the incisors. With a sharp knife carefully divide the wax pattern in the median line, (and if maxillary lateral bands are also used, in lines corresponding to the division lines between the maxillary centrals and laterals). Smooth down these cuts gently with the thumb.

14. Warm the maxillary bands and close the articulator. Before opening, tack the wax patterns securely to the maxillary bands. Chill and open. The wax pattern comes away with the maxillary model.

15. Finish waxing the patterns to the bands.

16. Tease the bands off the model, add sprues and cast.

ADVANTAGES OF THIS METHOD

1. It establishes accurately the relations of the plane to the maxillary and mandibular teeth and gives the greatest possible angle of inclination that will not interfere with soft tissues of the mandible.

2. The impression of the mandibular incisors cast into the incline provides a definite registration position for the closed mandible.

3. It is also a much shorter technic than any other.

4. It reduces the bulk and gives a well finished appliance.

A METHOD OF CLEANING ORTHODONTIC MODELS*

BY MARTIN DEWEY, D.D.S., M.D., NEW YORK CITY

ANYONE who has practiced orthodontia any length of time probably possesses rare and valuable models which have become dirty from dust, which has an inherent desire to collect on orthodontic models. Dirty models can be successfully cleaned by the following method:

The model should first be dipped in water for a minute so as to thoroughly saturate the plaster. It should then be placed in a solution of postassium permanganate, one to one hundred parts. The model should be left in this solution for about five minutes. The permanganate solution is an oxidizing agent and after the model is removed from the bath it should be left in the

*Clinic given before the American Society of Orthodontists in Kansas City, April 24, 1924.

sun from fifteen minutes to a half hour or longer. The model will be covered with a brown deposit and will appear hopelessly ruined until the next step is taken in the process.

The next solution in which the model is immersed is composed of bisulphite of soda, five to one hundred parts. To a pint of this solution should be added about five drops of sulphuric acid. Almost as soon as the model is placed in the bisulphite solution it becomes white but should be left in about five minutes to allow the bisulphite of soda to penetrate the model as deeply as the permanganate solution. The model should then be held under running water for a few minutes to remove the bisulphite of soda.

This method of cleaning leaves a very white model and injures the plaster very little. This technie was called to my attention by Dr. Paul Geoffrion, of Montreal, a former student of mine.

CLINIC*

BY DR. OSCAR E. BUSBY, DALLAS, TEXAS

THE SUBSTITUTION OF GOLD INLAYS FOR ANCHOR BANDS

WE have recognized that for a long time almost all forms of orthodontic appliances have been criticized, in varying degrees, in regard to prophylactic and pathologic conditions occurring, especially about teeth around which various forms of anchor bands have been placed and worn for some time.

We realize also, the susceptibility of the first molars to dental caries. Many children present carious first molars which of course require inlays or other restorations before orthodontic treatment can be instituted. It is further recognized that from a consideration of dental caries, the approximating surfaces of the teeth next to the banded tooth is often found to be carious due to their contact with the metallic bands.

Having in mind the above conditions and considerations, as well as the approval of Dr. E. L. Knox, a crown bridge and inlay specialist and also a great believer in preventive dentistry, even to the extent of, in many instances, tracing out and restoring the fissures and grooves in first molars of children as preventive measures, I began to use gold inlays for anchorage instead of the gold platinum bands, treating the inlay with tubes or other devices just as if it were a band.

When the orthodontic treatment is concluded remove the appliances and with stones and disks remove tubes and polish the inlays and leave in the cavities of the teeth so treated.

The author of this clinic presents models and x-rays of a case merely to advance an idea with the hope, if it has any merit, that others will perfect it.

*Presented during the meeting of the American Society of Orthodontists at Kansas City, Mo., March, 1924.

ANTI-MOUTH BREATHING DEVICE

BY P. G. SPENCER, D.D.S., WACO, TEXAS

IT is not the intention of this clinic to present an original idea, nor a device that is applicable in all cases. However when proper cooperation can be obtained, it is believed that one will receive valuable assistance from this device in the period of retention treatment of the majority of our distoclusion cases.

TECHNIC OF CONSTRUCTION

Impression.—Soften one cake of impression compound. Form into a roll one half inch, with the teeth in contact; retrude lips and cheek, placing one end of the roll of compound, buccally in the region of the molar on the right side and quickly adapt the balance of material to the teeth around to the left side, taking care to force the material well into the folds of the attachments of lips and cheeks, exerting pressure only upward and downward from the teeth, thereby avoiding formation of creases or air pockets. Chill and remove carefully to avoid distortion, or correct it at once.

Trimming.—Trim away all the material forced between the teeth occlusally, unless depression of certain teeth is desired, or you desire to maintain space for an unerupted tooth. If any teeth are only partially erupted, trim away freely in the path that the erupting tooth should follow. Should slight rotation of any tooth be desired trim material away from the position the tooth should occupy. Trim outline of all muscle attachments, frenum, etc. that such attachments will not have a tendency to displace the completed device. If any appliance such as a retainer, is being worn with any buccal tubes or spurs, amplify such slots or depressions in the impression so that they will be properly reproduced on the cast, as a correctly placed slot in the device which will fit over a buccal tube or spur will assist materially in keeping it in place until the patient learns to wear it. That portion of the material extending around the distal of the last molar should not be trimmed away, as this will assist the retention.

Plaster Cast.—Box impression with base plate wax and pour with plaster using the usual precautions to avoid air bubbles. Separate and if maxillary anterior teeth still require retrusion, a slight amount of plaster may be trimmed away from the labial surface. To depress any tooth, trim plaster from occlusal surface. If rotation is desired trim plaster slightly from that portion of the tooth upon which you desire pressure.

Waxing.—Mark outline on cast of width desired, and do not let wax extend beyond this line, thereby avoiding future trimming. A small feathered edge groove may be placed in the wax about two millimeters from the border, ex-

*Clinic presented at Kansas City, Missouri, March 22, 1924, before the American Society of Orthodontists.

tending from canine to canine. This featheredged groove will be reproduced in the velum rubber and will assist patients materially in keeping lips closed. Thinness of the rubber over the anterior teeth assists in the ease of wearing, so avoid excessive amount of wax in the anterior portion, as this will be replaced with velum rubber and cannot be polished thinner after vulcanization. The wax need not be over two millimeters thick over anterior teeth, while the wax distal to canines may be much thicker, at least in molar regions, as this part will be of regular vulcanite and can later be polished to desired thickness.

Flasking and Polishing.—An extra large flask is necessary to permit proper placing of the vulcanite. Flask in upright position, when separated the extreme ends need not be exposed, as vulcanite can be packed into the molar regions. Regular vulcanite should only extend forward to the first premolar region, and velum rubber should cover all anterior portions and back well past the canine eminences. These eminences being the only places that become irritated in wearing the device, and this fault is eliminated by using velum rubber over this portion. Velum rubber also permits patient to place and remove device without fear of breakage. The vulcanite portion should be given a high polish and foil may be used over the velum to obtain as smooth a surface as possible. Any excess edges of the velum may be trimmed as desired with sharp scissors. Any portion extending between the teeth to hold space should be reproduced in velum rubber. This can be trimmed away as the tooth erupts.

Successful usage depends upon proper cooperation of the patient, and without it a failure will result.

TECHNIC FOR SECTIONAL MODELING COMPOUND IMPRESSIONS*

BY FRANK A. DELABARRE, A.B., D.D.S., M.D., BOSTON, MASS.

A BRIDGE tray is used for any age; right or left sides; maxillary or mandibular.

The modeling compound is heated, introduced into the tray, and moulded to the desired form. It is then chilled in cold water until it is too hard to take an impression; then the exposed surface is warmed over a Bunsen flame until it is glazed and softened about one-third of the way through: then it is plunged into hot water to prevent it from sticking and waved in the air to cool off the outer surface.

The left side is always taken first and the tray inserted and pushed down in the direction of the long axis of the molar teeth; when it is in place the right forefinger is used to press the excess compound against the buccal tissues and the labial surfaces of the incisors and alveolus: the back of the mouth mirror is then used to do the same on the lingual surface posteriorly again and the forefinger is just lingual to the incisors; it is then

*Clinic given before the American Society of Orthodontists, Kansas City, Mo., March 18, 19, 20, 21, 1924.

chilled and removed in the opposite direction and thoroughly chilled in cold water.

The tray is taken off and the impression trimmed in the incisor region, labially, lingually and across, leaving three planes converging toward the incisor edge with surfaces as broad as possible and with sharp edges; the transverse cut should be made across the impression of a tooth, rather than through an approximal space: any excess on the top of the posterior portion should be cut away.

For the right side, the handle of the tray is reversed and the compound treated as before except that more is used in the incisor region.

The chilled left half is then reinserted in the mouth and held in correct contact by the assistant, and the tray inserted on the right side in a manner similar to that used previously and the compound manipulated as before, pressing against and overlapping the left half. It is then chilled and the two halves removed separately: (it is not necessary to use any coating to keep them from sticking together).

If the contact surfaces are sufficiently broad and accurate approximation made while soft, it will be found that they will register perfectly.

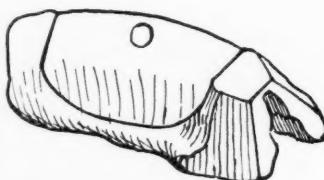


Fig. 1.—Impression of mandibular left trimmed ready to be reinserted.

The maxillary is taken in precisely similar manner except that the finger alone is used to press the excess up into the palate.

Two sections are sufficient in ordinary cases to give an accurate impression but badly inclined incisors demand a third section to be taken of their labial surfaces while the right and left halves are held in place by the assistant. Posterior teeth inclined toward each other leaving a pyramidal opening between should have a section made and trimmed, of that opening, to be in place while that half is being taken. As many sections as the peculiarities of the case demand may be made.

The advantages of this method are as follows:

1. It is to be preferred over plaster in all very young or nervous patients.
2. No pieces are lost of important parts like the interdental spaces or occlusal surfaces, so it is not necessary to hand carve such defects. The anatomic portion of a model should never be carved as that destroys its accuracy and impairs its scientific and legal value.
3. The time in removing from the mouth and reassembling is almost entirely saved as well as in separating.
4. A carefully perfected technic will give a result that will compare favorably with a plaster impression in accuracy and appearance.

CASE REPORT OF AN IMPACTED MAXILLARY CANINE

BY DR. JEROME H. TRIER, NEW YORK, N. Y.

BY examining x-ray picture —, Fig. 1, we find a temporary canine crowned and used as an abutment for a bridge. It is quite evident that the dentist did not recognize the deciduous from the permanent teeth, for if he had, the deciduous canine would never have been used as an abutment. Therefore, we see the necessity for the general practitioner to be familiar with tooth forms so as to be able to recognize the difference between the deciduous and the permanent teeth.

This case will also show the necessity for radiograms of the entire mouth before placing any artificial restorations on the teeth. Granting, that the dentist was not capable of differentiating between the deciduous and the permanent teeth, I feel sure that if he had taken radiograms he undoubtedly would have observed the impaction of the mandibular right canine (Fig. 1), and the impac-



Fig. 1.



Fig. 2.

tion of the maxillary left canine (Fig. 2), and would not have proceeded to place artificial restorations in the mouth of the patient without first caring for these impactions.

Also, I wish to call attention to the influence which an impacted tooth may have on some other organ due to the intrinsic nervous system of the head and neck. This may best be explained by giving a report of the case.

Mr. D., aged twenty-seven, was recommended by an eye specialist. The patient had been suffering intense pain over the left eye. He underwent a thorough examination by the specialist who, having found no apparent cause for the trouble, instructed the patient to visit my office.

After examination of the mouth, I recommended radiograms of the entire mouth. The picture revealed an impacted mandibular right canine and maxillary left canine. I advised the removal of the mandibular right deciduous canine. I informed the patient that his eye trouble might be caused by the impacted tooth and suggested that he allow me to bring both of the teeth into the line of occlusion so that they might become useful members of his masticatory apparatus.

A Mershon lingual appliance was constructed with bands upon the maxillary right molar and left first and second premolar. The maxillary first and second premolars were united by a bar upon the lingual side of the teeth and the attachments for the appliance soldered on the bar.

A local injection was used and the usual surgical procedure was followed to expose the canine. At the same time a hole was drilled in the labial surface of the canine and a pin cemented to place.

The lingual appliance with a finger string on the maxillary left side, was placed in position and a ligature, which engaged both the spring and the hook on the impacted canine, was used. No work was done on the mandibular arch at this time. The patient was still suffering intense pain of the left eye.



Fig. 3.



Fig. 4.

After four months the tooth had been moved quite a distance from its initial position and the patient informed me that the usual pains seemed to have vanished. After nine months of treatment the canine is seen nearly in its proper position.

Fig. 3, shows a model of a maxillary condition as presented upon the first visit with bridge from central to first premolar in position.

Fig. 4, shows the maxillary arch with bridges removed and the canine almost completely erupted.

DELAYED AND ARRESTED ERUPTION*

BY EDMUND CLAREMONT, M.R.C.S., L.R.C.P., L.D.S.

THIS case related to three members of a family who showed apparently well-marked signs of rickets. The father, whom we will call A in order to avoid confusion, died in 1913. There was a history of heart trouble and death was due to paralysis. He was operated upon thirty years ago when a growth in the mandibular jaw was removed, but no notes are available relating to that operation. This man A was married twice. By his first wife there was one son B (see illustration) who showed characteristic features such as

*Transactions of the British Society for the Study of Orthodontics.

flattened bridge of nose, marked depression of anterofrontal suture, square head and prominent frontal bones. He was of small stature, and stated that he had only had a few teeth; his health had always been good. This man B had two sons, the elder aged twenty-three and the younger fifteen. This younger son we will call C. From a photograph the elder son, aged twenty-three, looked normal, though his teeth were very badly formed and were lost almost im-



Portrait of "C."



C, Grandson of "A." (Left side.)

mediately after eruption, being apparently hypoplastic. A had ten daughters by his second wife, five of these dying in infancy. The cases showing delay and arrested eruption related to the boy C, grandson of A, and two of A's daughters by his second wife, whom we will call D and E. One of these daughters, D, aged forty-two, had only cut a few of her permanent teeth, these being hypoplastic. She had well-marked flattening of the nasal bridge, a typically rickety forehead, clavicles deficient at the sternal end, and was of very small stature. One or two teeth were removed at Guy's Hospital some years ago. The patient had worn full dentures over three partially erupted teeth for a long time. Some months before reporting in the Dental Department of the Bristol General Hos-

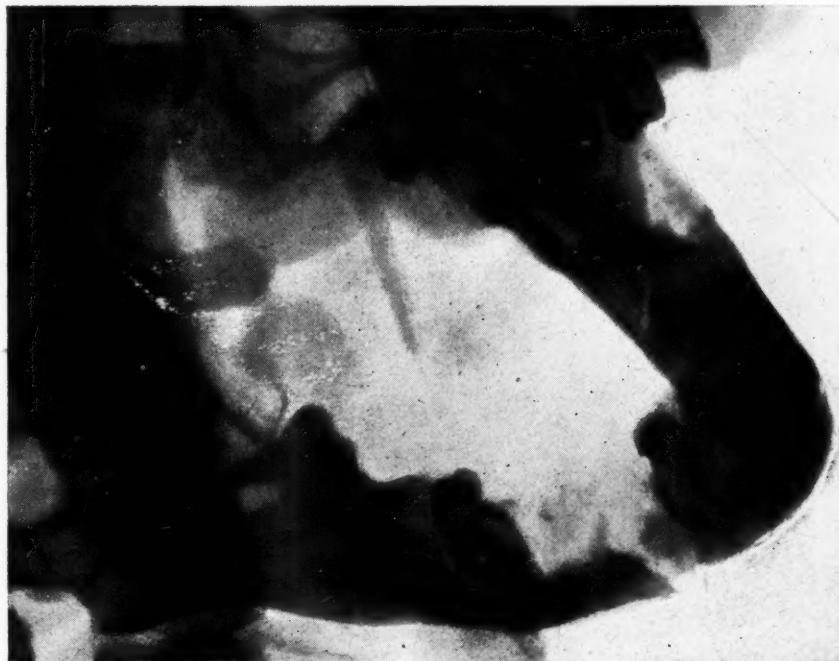


C, Grandson of "A." (Right side.)

pital she had complained of increasing neuralgia on the left side of the mandible, with an unpleasant taste in the mouth and with a sinus opening on the cheek in the region of the left mandibular canine tooth. I operated on her on December 4, 1923, when a window was cut in the outer alveolar plate in the mandibular left molar region removing five teeth embedded in the bone. This bone was soft and carious, and the mandible was found to be fractured. The sinus on the cheek was freely opened up and scraped, the wound was washed out daily. There was very little discharge, and the sinus and wound in the mouth healed up well. This patient has two sisters resembling her, and two others apparently normal. One of the two sisters (E), who resembles her, has never cut her second dentition, having worn full dentures for years and been

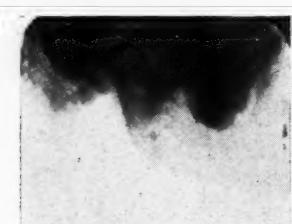


D, before operation. One of the sisters, aged 42. Some rarefaction of bone around molars and premolars.



D, one of the sisters, aged 42. Left side, x-ray showing fracture after operation.

CASE E.



Left maxilla.



Right maxilla.



Maxillary front teeth.



Mandibular right molar.



Mandibular left molar.



Mandibular front teeth.



Mandibular right premolar.



Mandibular left premolar.

absolutely free from any trouble with the jaws or teeth. She is very similar in appearance to D, having deficient clavicles and being of small stature. With regard to the boy C, the nephew of these two women, his dentition is very defective. The anterior fontanelle is still palpable. In him also there is a flattened bridge to the nose, the frontal suture very depressed, the head square, the frontal bones prominent, the stature small, the fourth fingers abnormally



Case E.

short and the arms normal. His clavicles are also ill-developed, there being a space of two inches between the end of the bone and the sternum. Chest expansion fair, air entry normal with no adventitious sounds. The spine shows slight scoliosis.

DISCUSSION

The President said that this was an extraordinarily interesting case, which made it all the more difficult to understand what was the cause of the noneruption.

Mr. Pitts said that a good many years ago he had reported a case to the Odontological Section of the Royal Society of Medicine of a delayed eruption in a young man where a few teeth only had erupted. In that case there was very good bone indeed. The skiagraph picture and the notes of that case were included in the last edition of Sir Frank Colyer's book. With regard to the rachitic and possibly syphilitic history of Mr. Claremont's case, it would be interesting to know whether a Wassermann reaction had been taken. He had seen a fairly large number of children with congenital syphilis, but he had not been able to find among them any evidence of delayed eruption, nor had he found anything satisfactory with regard to rickets. There were some cases of extraordinarily early eruption. But at the time when the eruption was taking place, among children of seven or eight years of age, the time for rickets had very often passed, and

it was extremely difficult to obtain any history, the more so because mothers seemed to think that for their children to have had rickets was a stigma which must be concealed. He was not certain that rickets or syphilis were very closely concerned with eruption, but he did feel certain that there was an endocrine factor in eruption. It was very usual in these days to invoke the ductless glands, but the evidence did suggest that they were an important factor in bringing about eruption.

Dr. Howard Clark referred to a note in the *British Dental Journal* for the current month which had a bearing on this subject.

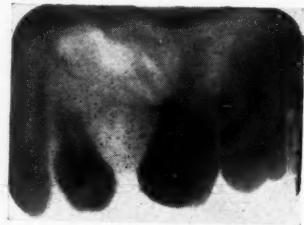
The President said that it was now some years ago when he examined a good many children in Vienna who had rickets, and many of these children had lost their deciduous teeth very early and there seemed to be a delay in the eruption of the permanent ones.

Mr. Claremont, in reply, said that a Wassermann was taken in these cases and was negative, but he felt, from what he knew of medicine, that that did not say very much. Another question was whether there was any idiocy in the family. All he could say

CASE OF ABSENCE OF PREMOLAR TEETH
(CASE OF MR. CLAREMONT)



Maxillary right.



Maxillary left.



Mandibular right.



Mandibular left.

was that the boy had a certain amount of mental slowness. He was also very deaf and altogether must be accounted as almost mentally deficient. It might be an interesting experiment to try some parathyroid.

Mr. Claremont then described another case in which there was absence of premolar teeth. This related to a boy of 13 whose family had been coming up to the Bristol General Hospital for some years. The boy had had an excellent deciduous dentition, and only very recently had had trouble with three of his retained deciduous molars. When the bone was skiaigraphed three or four of the premolar teeth were found to be absent. The right maxillary permanent canine was next to the first permanent molar. In front of them was the deciduous canine retained. He showed pictures and models of the case.

Mr. Pitts asked whether the deciduous molars showed any sign of absorption.

Mr. Claremont said that the deciduous molars showed the normal amount of absorption.

A Member said that it would be a very good thing if Mr. Claremont would present the actual photographs and models of his case to the Museum of the Society.

Mr. Claremont said that he would be very pleased to do so.

Mr. Lacey asked whether the absence of premolars was in any way inherited. He had come across a case in which it was transmitted through three generations.

Mr. Claremont said that in his case the remainder of the family had developed their premolars properly.

TWO CASES OF ABSENCE OF ALL EIGHT MOLARS

BY J. H. BADCOCK

Mr. Chapman for Mr. J. H. Badcock, who was unable to be present, showed models and skiagrams of two cases of absence of all eight premolars.

In one case, a boy, $\frac{D|D}{D|D}$ had been lost and $\frac{E|E}{E|E}$ were present, firm and with roots unabsorbed. No family history of deficiency of teeth could be elicited.

In the other case, a girl, $\frac{|D}{D|}$ had been lost, $\frac{D|}{D|}$ showed extensive absorption and were about to be lost, $\frac{E|E}{E|E}$ were present but $\frac{E|}{E|}$ showed signs of absorption. In the mother



Fig. 1.

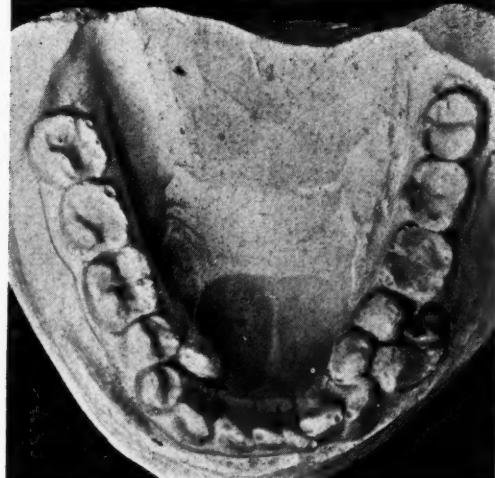


Fig. 2.

$5 | 5$ were deficient and $E | E$ retained into adult life. The mother's aunt is said to have had the same condition but this was not verified.

Mr. Badeock also showed two models of Indian natives sent by Mr. C. F. Badeock of Madras; one showing two supernumerary teeth in the maxilla and four premolars on each side of the mandible (Fig. 1) and the other four premolars on one side of the mandible and three on the other (Fig. 2). The models were presented to the Museum.

A CASE OF PARTIAL NASAL OBSTRUCTION FROM FIVE TO NINETEEN YEARS OF AGE*

By F. BOCQUET BULL, L.D.S., M.R.C.S., L.R.C.P.

THE patient, a male, was born in November, 1881. In 1886 or 1887, at the age of five or six years, he pushed up one of his nostrils a small piece of rubber such as is found in the end of a cheap pencil and pencil-holder.

About 1899 or 1900 the patient would then be about eighteen or nineteen years of age, a rhinolith was removed from the nose by Dr. Greville Macdonald at King's College Hospital. This rhinolith was too large to be removed without



Fig. 1.—Palatal view of maxilla.

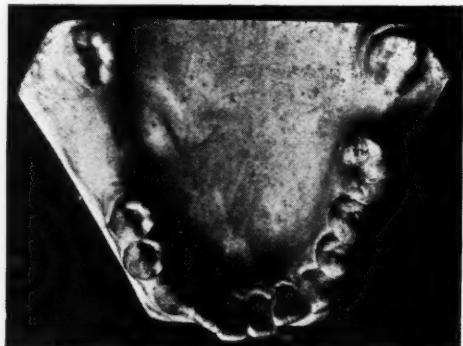


Fig. 2.—Mandible, showing overcrowding in incisor region.

first crushing it. The piece of rubber undoubtedly formed the core or nucleus of the rhinolith, and had, therefore, been present for thirteen years during the adolescent stage.

For a few years previous to the removal, the patient had suffered from frontal headache, confined chiefly to the supraorbital region. He had also, at intervals, been in the habit of removing large casts of congealed mucus of the consistency of cheese, which were sometimes as large as the kernel of a Brazil nut. They were removed, with great difficulty, by a series of vigorous naso-oral inhalations, into the pharynx, and then coughed out.

With regard to the breathing, as far as the patient remembers, he had great difficulty in breathing through one nostril. As to whether there was an

*Transactions of the British Society for the Study of Orthodontics.

appreciable amount of difficulty in regard to the other nostril he would not be prepared to make any comment.

Observation of models of the mouth show it to be a case of Class I, with the central incisors biting edge to edge, and the mandibular incisor region somewhat crowded. The maxillary arch is an extremely well-formed one, associated with a normal palate. The case is an interesting one in its evidence in regard to the relationship of nasal obstruction to oral deformity and maloclusion. The interest, of course, lies in the fact that here one has a very definite history of a partial nasal obstruction—probably to the extent of 50 per cent of complete nasal obstruction—over a period of years when the development of the facial

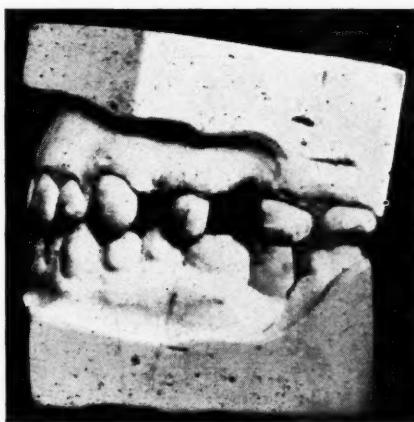


Fig. 3.—Buccal view, left side.

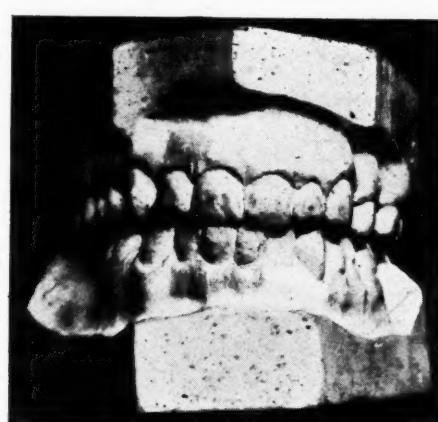


Fig. 4.—Labial view. The edge to edge central incisor bite is not shown very well owing to the fact that the upper model has slipped forward slightly.

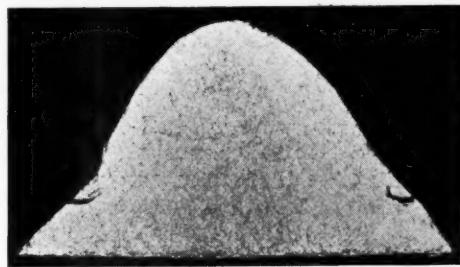


Fig. 5.—Design to illustrate the contour of the palate.

bones was taking place with, I think one could well say, no detrimental result as regards the development.

A radiogram of the head taken anteroposteriorly shows the antra to be very well developed and the nasal septum to be almost normal, i. e., with only very slight deflection, such as is present in nearly all nasal septa.

DISCUSSION

Mr. Pitts said that this was one more case, added to a considerable number, which should make them skeptical of associating nasal obstruction and dental irregularity. There was undoubtedly some relation between nasal obstruction and the dental arches, but whatever that relation was, it was not an obvious or straightforward one. In this case the

nasal obstruction, plus some other factor which was not yet discovered, was the responsible cause. Possibly it might be that sepsis was a factor. He drew attention to the fact that a very interesting study of the adenoid child, bearing upon the subject of Mr. Bocquet Bull's communication, had just appeared in the *Quarterly Journal of Medicine*.

Mr. H. Chapman endorsed the opinion of Mr. Pitts. Many members would recall the fact that the Society appointed a committee some years ago to investigate the relations between nasal breathing and narrow dental arches, and the history was gone into as carefully as possible. It was found that those cases in which the arches were the best had the best history as regards mouth-breathing and *vice versa*, that is to say, the possessors of narrow arches were nasal breathers.

Mr. Warwick James said there was an asymmetry of the arch. He noticed that the third molar was present on the left side and not present on the right. There was asymmetry, but he thought it was due to the collapse of the arch on that side and the loss of teeth. With regard to the question of mouth-breathing, he thought that the term "mouth-breathing" was very unfortunate; the term "lips apart" would meet the case much better than a term which suggested mere mechanical breathing through the mouth. If the lips were apart the jaws were not closed as a rule, but they themselves were deceived sometimes when they spoke about mouth-breathing and thought of air actually passing through the mouth.

The President said that the point which Mr. James had just made was very important, because in Mr. Bull's case the lips were shut. He believed also that the term "mouth-breathing" was unfortunate; it was the lip effect that was the important factor.

Mr. F. B. Bull, in reply, said that he was sorry he had not been able to bring along that evening the radiogram showing the anteroposterior view of the skull. But he might perhaps bring this forward later before the Society in the shape of a casual communication. He believed it to have been the left nostril that was obstructed.

A TREATED CASE*

BY J. W. MAYER, L.D.S.

THE models are those of a patient aged fourteen years and seven months. As you see there is a considerable lack of development in the front of this mouth, and as a result the biting edges of the four maxillary incisors are behind those of the mandibulars. You will, I think, agree that in treating these cases one has to avoid tilting the front teeth and also hampering the child's power of mastication whilst "raising the bite." The apparatus used in this case consists of two parts:

1. A splint fitting the four incisors to which are soldered two parallel tubes projecting high up under the lip, and
2. Caps covering the premolars and first molars to each of which is soldered a guide ring. Sliding through this guide ring is a rod, one end of which will fit tightly into the tube attached to the splint on the front teeth—the other end free and projecting towards the back of the mouth and shaped so that a rubber ring can be hooked through.

It can be seen that if a rubber ring be placed on the hook as above described

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and stretched so as to be attached to a fixed point in front, it will, in contracting, tend to slide the rod forward through the guide ring, ultimately pushing forward all four incisors since the other end of the rod is fixed tightly in the parallel tubes. The apparatus is much less apparent in the mouth than one would imagine. It is not simple to construct, but it has the advantage that once fixed in position with copper cement it will not come off, needs no adjusting, being automatic in action, the patient putting on fresh rubber rings each night until the front teeth are far enough forward.

Many of the spots on the teeth which are liable to become affected by caries

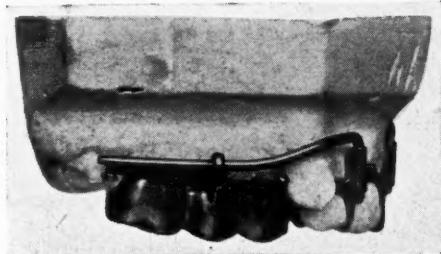


Fig. 1.

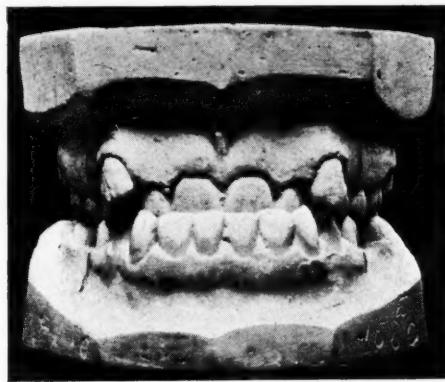


Fig. 2.

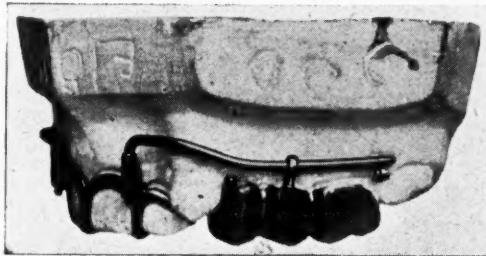


Fig. 3.

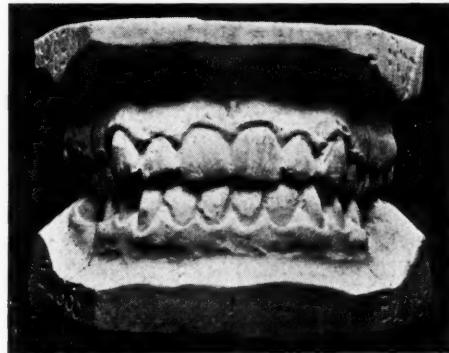


Fig. 4.

are covered with copper cement, whilst as no part of the metal impinges on the gum it is hoped that by the average cleanliness of the patient, gingival irritation is reduced to a minimum. Pressure being directed high up on the root and distributed, tilting is avoided. It is felt that by putting pressure on the four front teeth splinted together as shown, it is most likely to stimulate the development of bone in the front part of the mouth.

Treatment was spread over nine months and no retention was used. The next slide shows result, and if the first models are placed so as to be compared in profile you will notice little or no tilting has taken place. I have to thank Mr. Jas. P. Brown for constructing the appliance. I am handing to you two facial casts, one of the patient before treatment and one after treatment, which shows modification has taken place in the features.

A VERY PRONOUNCED CASE OF CLASS III*

By C. S. MORRIS, L.D.S., M.R.C.S., L.R.C.P.

HE had previously shown this case before the society in May, 1922. It was a case of a child, and the photograph showed how the upper lip fell well inside the lower lip and the considerable depression which existed in the maxillary region. A photograph of the child as she is at present, compared with a corresponding photograph taken two years ago, showed an enormous improvement of the mandible. There had been a considerable development in the alveolar part of the maxillary region, and the lips now met almost edge to edge. The age of the child was now eight; she was six when the case was first

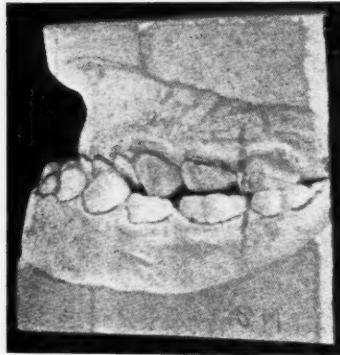


Fig. 1.

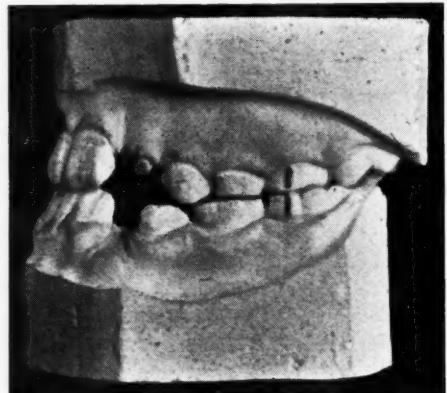


Fig. 2.

seen. He had asked the mother to make inquiries in her family as to whether there was any history, and she discovered a great-uncle who had this characteristic extraordinarily well marked, but this was not a normal case of inferior protrusion. The child had a well-marked angle to the jaw and that part of the face was very well developed and of normal shape. As to treatment, he had adopted a suggestion made by Mr. Northeroft on the last occasion, and soldered on to the external arch a weight of German silver to take the pressure off the front lip. This was put on in May, 1922, and the child wore this device until the first week in February, 1923, and it had a very marked effect. He was gratified to find that her teeth started to move forward, and of course, at her age, her teeth were beginning to loosen and some part of the modification towards the end of the year was due to the fact of such loosening. But there was not the slightest doubt in his mind that the device which Mr. Northeroft had suggested had caused the moving forward of the maxillary teeth.

With regard to the mandibular teeth, he decided to extract some of the deciduous teeth in order to prevent the development of the mandible, and also

*Transactions of the British Society for the Study of Orthodontics.

to allow the mandibular front teeth to fall back from any pressure there might be from the lower lip. In December, 1922, therefore, he extracted the mandibular deciduous canines, and this caused the mandibular teeth to fall back, and the combined result was well exemplified in the photograph which he now showed of the child's appearance.

DISCUSSION

The discussion on Mr. Mayer's and Mr. Morris's communications was taken together.

Mr. Samuel said that for his own part he had been very diffident about carrying out treatment on the lines which Mayer had suggested. The occlusion in Mayer's case had not been upset at all, but the speaker could imagine that in certain cases this treatment might upset what had been normally a very good occlusion.

Mr. Lacey asked if skiagrams were taken showing the development of the bone.

The President asked whether the teeth were very loose during this movement. He thought it was a fact that if a bone were fixed and not allowed to have any function, some changes took place which were not for the good of the bone. Did any changes of that nature occur through fixing the bone so firmly in this appliance?

Mr. Mayer, in reply, said that the maxillary teeth were actually behind the mandibular teeth. He was afraid he had not tested the vitality of the teeth, but he would do so. He did not know whether the teeth had undergone any considerable movement. They had undergone a relative movement, of course, but he was hoping to get actually a development of the bone in front, and to that end he had, rightly or wrongly, moved the bone forward. He did have a skiagram taken, but it was only taken about two days ago, and this case had been going on now for six months so that until some comparative skiagrams were available it was not of much value. As to the loosening of the teeth and possible interference with physiologic function, that was the one thing he worried about more than anything else. He certainly thought there was a great risk in the fixing of these teeth. As a matter of fact the teeth were fixed, but one must remember that there were no means of testing the teeth, because he did not remove the appliance. The patient had not suffered any discomfort.

Dr. J. Sim Wallace showed a model of an unusual case of open bite, and asked for any enlightenment. The appearance was so marked that at first he thought it was a fracture at the first molar, but on second consideration he saw that there was not any fracture at all.

CASE REPORT*

By MARTIN DEWEY, NEW YORK

THE case which I am going to present to you is one which is diagnosed either as a superversion of the incisors or infraversion of the molars, otherwise known as a case of excessive overbite.

The maxillary incisors practically cover the mandibular incisors. Viewing the model from the posterior position we were able to see the mandibular incisor occluding against the soft maxillary tissue. The maxillary arch is normal and no appliance was placed on the maxillary teeth. The appliance used on the case was simply a soldered lingual wire, and the entire change was produced by the use of the wire stretching pliers, with which we pinched this soldered lingual line of wire. A band was made for the first premolar, on the buccal side of which was soldered a wire which was also soldered on the first molar for stability in the molar and premolar regions. The wire rested against the lingual surface and mandibular incisors, and by pinching it in the proper regions and by bending the lingual wire down against the mandibular incisors we were able to change the plane of occlusion of the mandibular arch to the extent where the proper length of the mandibular incisors may be seen. I do not know what occurred except the plane of occlusion was changed. I believe the molars were elongated more than the incisors were depressed.

The only reason for reporting this case was the fact that the entire change in occlusion was produced by the soldered alignment wire with very little inconvenience to the patient.

The only other thing I would offer as a point is the question of elongating incisors, the centrals and the laterals of the maxillary arch. You will see a great many cases where the maxillary central incisor is decidedly longer than the lateral incisor. Some men have depressed those maxillary centrals and elongated the laterals trying to get the maxillary incisors in a plane which would be even with one another.

Now, I do not believe that you can take the incisal edge of your maxillary incisors as a guide to the relative length of the central and lateral of the maxillary arch. The point you should choose to determine whether these teeth are equally long as compared to the others is the linguogingival ridge and not the incisal edge. The linguogingival ridge has a certain relation to the mandibular incisor and you will find types of incisors where the central will be much longer than the lateral and you bring the incisal edge to coincide and throw the linguogingival ridges out of relation to each other. A great many cases where you have tried to line up your maxillary incisors will result in failure or result in relapse because you have changed the linguogingival ridge which like the mesiolingual cusp is a much more fixed anatomic point than is the incisal edge.

*Read before the American Society of Orthodontists, Kansas City, Mo., March, 1924.

DEPARTMENT OF ORAL SURGERY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

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A CORRECT TECHNIC FOR THE REMOVAL OF DEEPLY IMPACTED MANDIBULAR CANINES

BY LEO WINTER, D.D.S., NEW YORK CITY

Clinical Professor of Oral Surgery and Diseases of the Mouth, New York College of Dentistry.

AT a recent dental meeting, ways and means of removing impacted teeth were being discussed. One of the oral surgeons present showed a radiogram of an impacted mandibular canine, the crown of which appeared to extend very nearly to the inferior border of the mandible. The radiogram was a small number one dental film, from which a diagnosis of an impacted tooth could be made but which could not be used for determining its accurate location for an operative procedure. I was asked to outline the technic I would use in its removal. My answer was that I would first take a bite film, by placing a number two dental film between the maxillary and mandibular dental arches, with the sensitive side of the film facing downward, and then directing the rays from below upward. The resultant picture would give an accurate localization of the impacted tooth. If the tooth was found to be lying midway between the two layers of bone or toward the buccal, I would make a semilunar or semicircular incision midway between the superior and inferior borders on the buccal side of the mandible. The soft tissues should then be retracted downward and the overlying bone removed, beginning at the region of the apex. I would continue removing the outer plate following along the outline of the root until two-thirds of the length of the tooth was exposed; then I would place a spear-pointed elevator under it and exert pressure outwards. In other words, instead of exposing the portion of largest diameter first, the apical end would be laid open, and in that manner, the tooth could be removed with a minimum of trauma and very little loss of bone. My reasoning was that the bone around the crown would probably be in a pathologic condition, exhibiting some decalcification, and that removal of the tooth could be accomplished without chiseling down to the point of its largest diam-

eter. The oral surgeon then informed me that he removed the tooth externally. That is, he made an incision along the lower border of the mandible on the outside of the face, retracted the tissues, and grasped the crown. This procedure, in my opinion, constitutes an unwarranted encroachment upon the tissues of the face. Oral surgery has advanced and has kept pace with the progress of general surgery. One of its chief claims to distinction as a



Fig. 1.—Showing deeply impacted mandibular canine.

specialty of modern medicine is the development of the intraoral operation. And if operative procedures are adopted which have for their only justification the factor of accessibility, then we are reverting to a type of surgery which may have been pardoned forty or fifty years ago, but which can only bring the modern specialty of oral surgery into disrepute. Regardless of how neatly and skilfully an operation is performed through the external tis-



Fig. 2.—Bite film, showing accurate localization.



Fig. 3.—Radiogram taken immediately after removal of tooth.

sues it cannot fail to leave a scar. If it is a line scar it may ultimately disappear. If it becomes infected, however, it will leave a permanent scar. In either case it seems difficult to justify the making of an external incision when the intraoral operation is feasible. The case presented herewith is deeply impacted, yet the tooth was removed by the intraoral method outlined above.

A SYSTEMATIZED TECHNIC FOR THE REMOVAL OF IMPACTED MAXILLARY CANINES

BY LEO WINTER, D.D.S., NEW YORK, N. Y.

Clinical Professor of Oral Surgery and Diseases of the Mouth, New York College of Dentistry.

(Continued from February)

TECHNIC FOR UNILATERAL IMPACTED CANINE CROWN SITUATED PALATALLY AND LYING CLOSE TO THE GINGIVAL MARGIN

(Classification No. 1)

WHEN the number one dental film shows the crown of the impacted tooth to be lying close to the gingival margin, an incision including the gingival margin should be made. An incision is made distally to the lateral incisor on the side opposite the impaction (Fig. 22). Extend the incision posteriorly on the hard palate in a vertical line, to approximately the second premolar. Carefully insert a broad periosteal elevator and separate the mucoperiosteal flap, including the gingival margins of the teeth involved from the bone (Fig. 23). The flap may be held in position by passing a horse-hair suture through it and fastening the suture to a molar tooth. The overlying bone is carefully removed with mastoid gauges or bone burs, approximately two-thirds the length of the tooth, commencing at the coronal end. Insert a fine spear-pointed elevator under the crown. Gently mallet the elevator instead of attempting hand pressure. If resistance is met in the attempt to dislodge, more bone should be removed (Fig. 24).

In using the spear-pointed elevator, the leverage should be on the palatal process of the maxilla, and not on the teeth in the arch. Should the crown portion break off, or a portion of the root still remain, then great care should be taken in the removal of this fragment. The wound should be thoroughly dried and by the aid of a good light a clear view of the root obtained. A fissure or round bur should then be used, to remove the bone around the root, after which the root may be dislodged with little difficulty. All soft materials should then be removed by the careful use of a curette, the edges of the bone are made smooth, and the wound irrigated with an antiseptic, preferably an iodine solution one-fortieth of 1 per cent (Fig. 25). The flap is then replaced. Sutures are used only where teeth are missing. Where there are no sutures used, a pad of gauze, the size of a tonsil sponge, is placed on the palate after the flap is in position. The gauze is then pressed

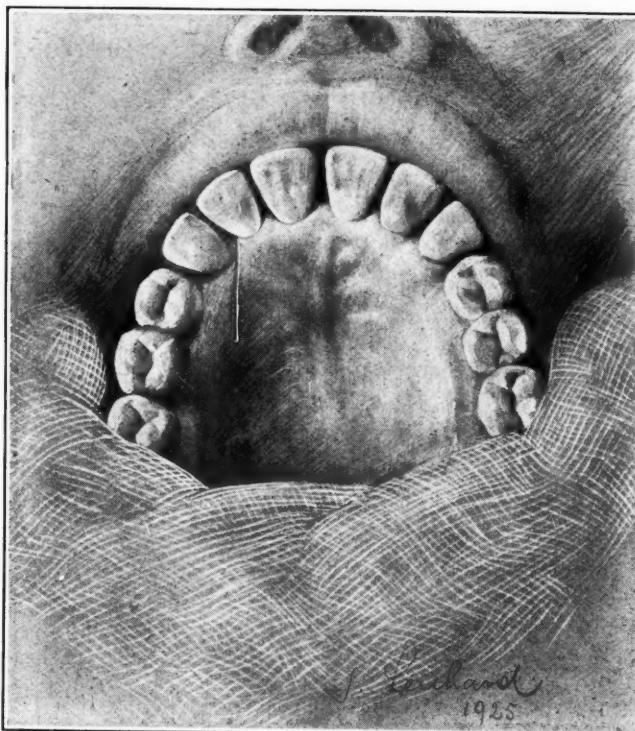


Fig. 22.—Incision to be made in single impaction cases where the crown of the impacted tooth lies close to the gingival margin, and in cases of double impactions regardless of the distance between the gingival margin and the crowns of the impacted teeth.

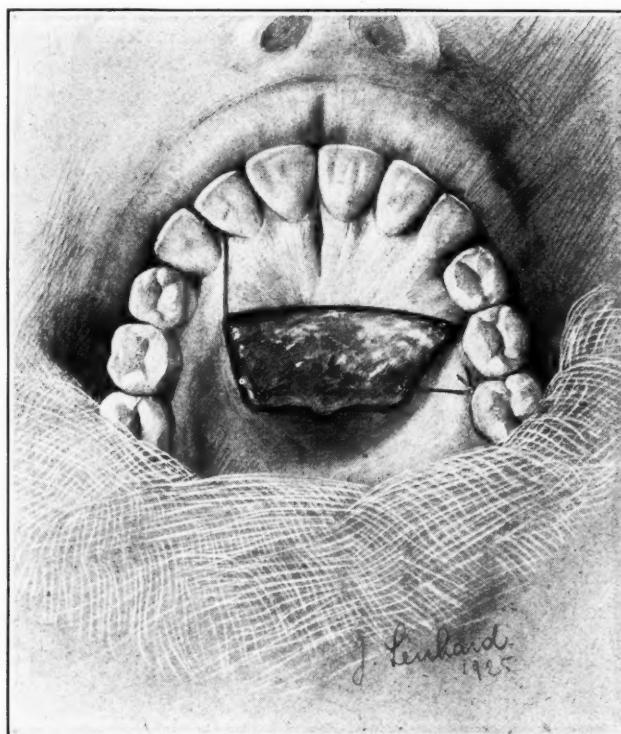


Fig. 23.—Mucoperiosteal flap including the gingiva retracted and held in position by the aid of a double horsehair suture tied to a molar tooth. The insertion of a broad periosteal elevator into the incision, and exerting force upward and outward will facilitate the separation of the soft structures from the bone and prevent any laceration.

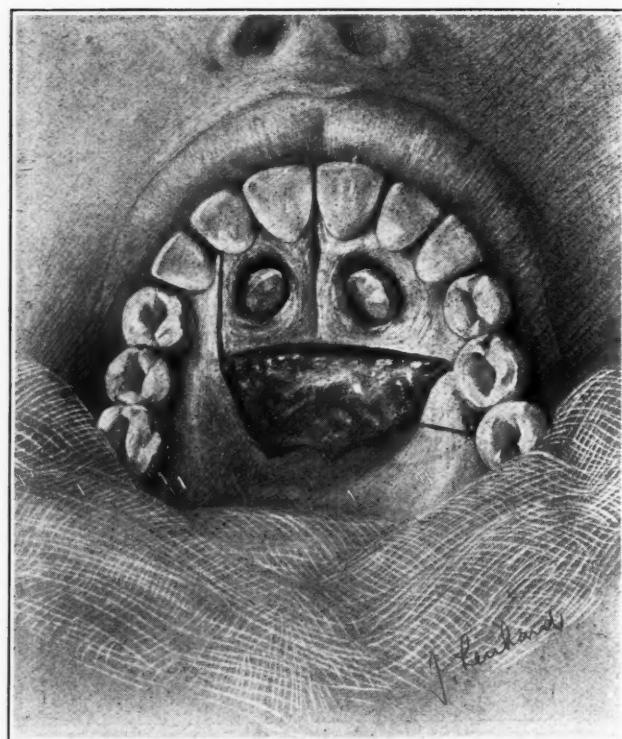


Fig. 24.—Showing sufficient bone removed over the coronal portion to permit of the insertion of a spear-pointed elevator.

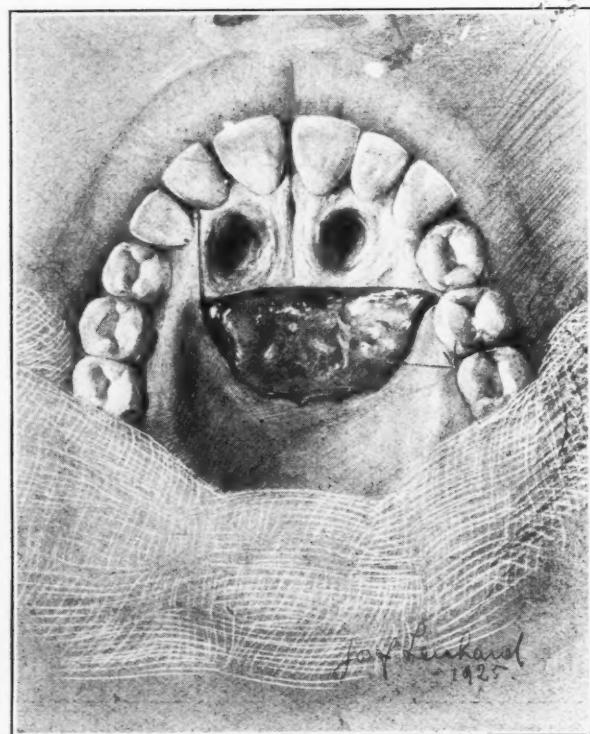


Fig. 25.—Showing teeth removed and all sharp edges of bone made smooth.

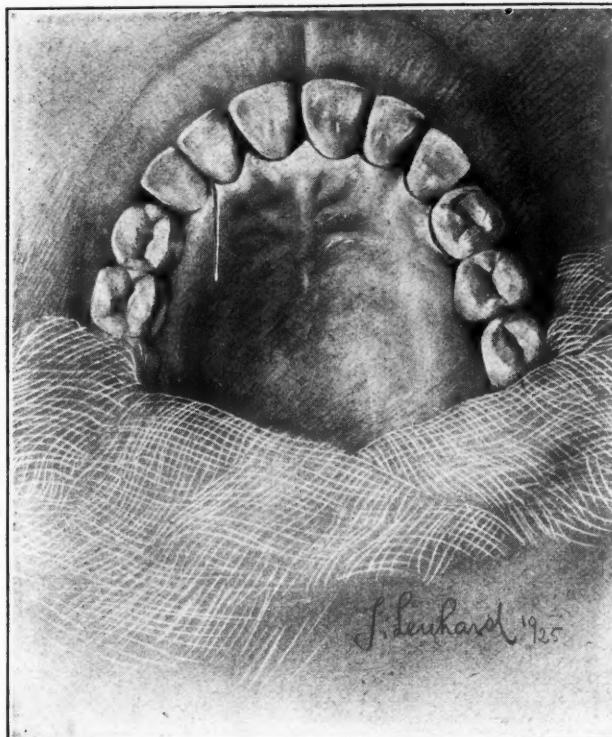


Fig. 26.—Flap placed back into position. No sutures necessary, because of the presence of all teeth in area involved.

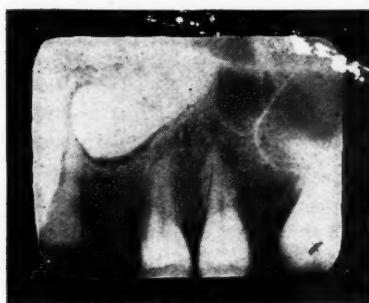


Fig. 27.



Fig. 28.

Figs. 27 and 28.—Types of cases where a semilunar or semicircular incision may be used. Note distance of the crown of the impacted tooth from the gingival margin.



Fig. 29.—Case in which a semilunar incision may be used, owing to the distance of the crown from the gingival margin.

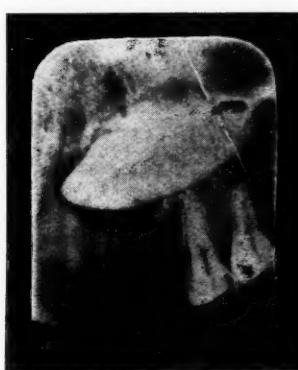


Fig. 30.



Fig. 31.—Impacted canine. Teeth in arch—caries in crown portion.

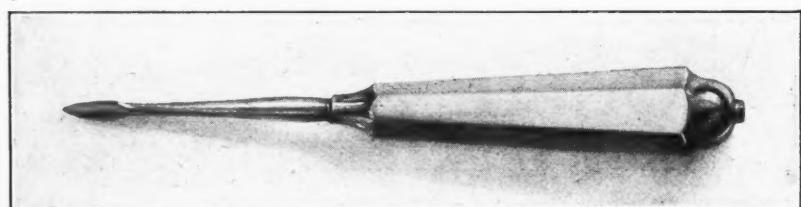


Fig. 32.—Spear-pointed elevator with steel rod running through it and extending from posterior surface to receive the blows of the mallet.

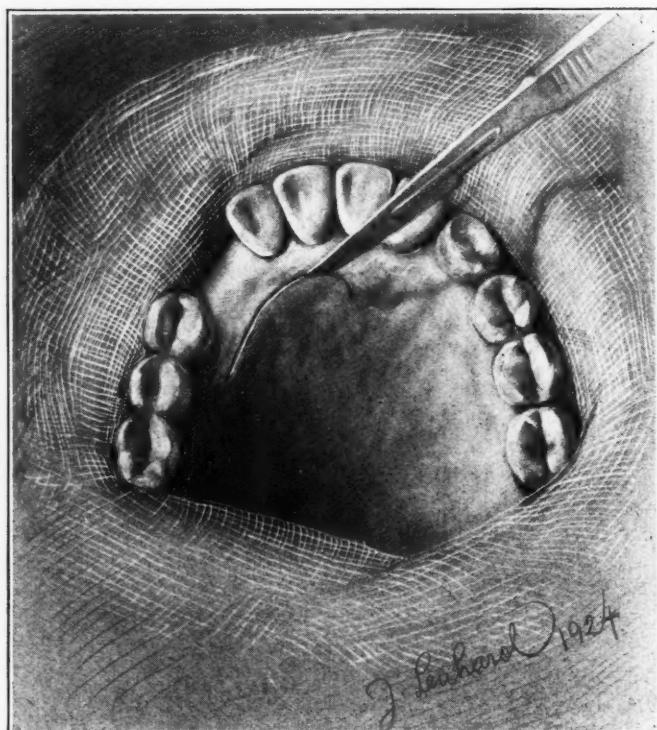


Fig. 33.—Semilunar or semicircular incision to be used only in single impacted canines, where crown lies sufficient distance from gingival margin.

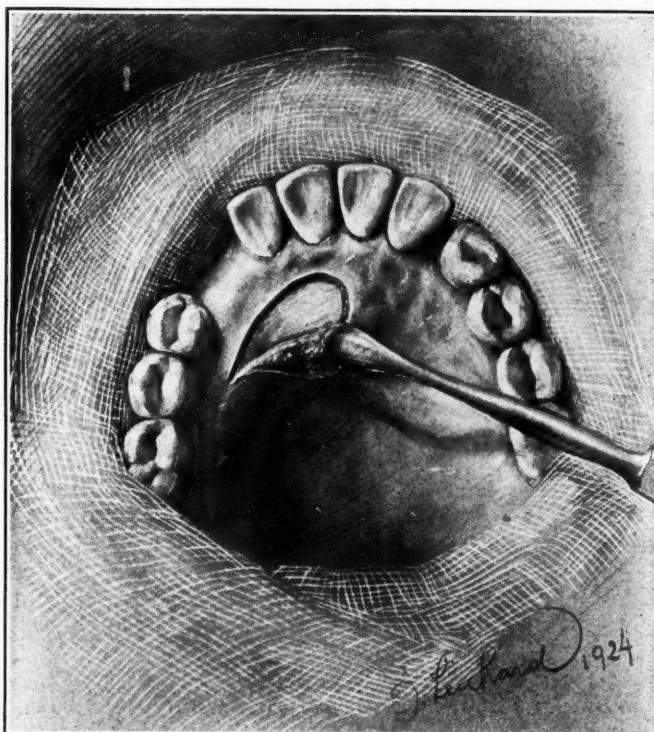


Fig. 34.—Elevation of mucoperiosteal flap. Type of periosteal elevator best adaptable for these operations is also shown.

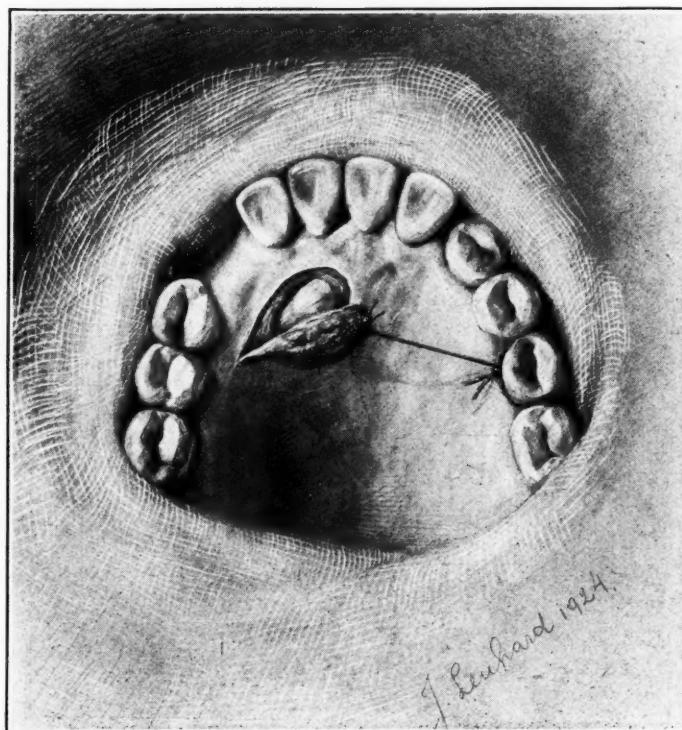


Fig. 35.—Showing sufficient amount of bone covering the tooth removed to permit of its removal by means of an elevator or thin-beaked forceps.

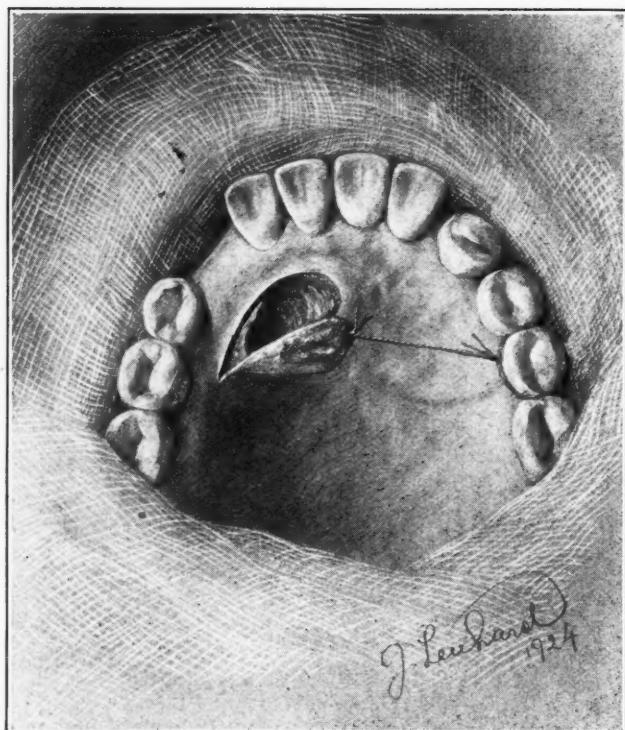


Fig. 36.—Tooth removed, area curetted and all sharp edges made smooth.

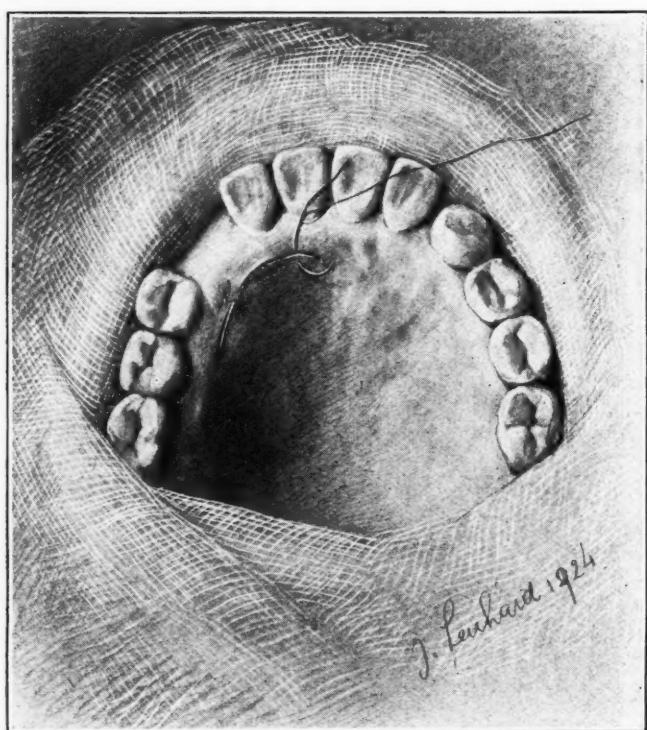


Fig. 37.—Showing technic of inserting sutures. Care should be taken to insert the needle a safe distance from the incision on each side, to prevent tearing of the mucous membrane.

against the palate by closing the mouth and held in position for approximately ten minutes.

Suturing in these cases is best accomplished with fine curved needles and sterile horsehair. This combination eliminates the tearing of the mucous membrane. Sutures should not be removed until at least six days following the operation.

It must be clearly borne in mind that our efforts must be directed toward exposing the crown of the impacted tooth, for that is the portion of the largest diameter. It may be readily conceived then, that where the radiogram reveals the presence of the crown close to the gingival margin, and a semicircular incision is made, there will unquestionably be a laceration of the mucous membrane from the incision to the gingival margin in the attempt to expose the crown. In most instances this results in sloughing (Figs. 27 to 31).

The handles of the spear-pointed elevator should have a steel rod running through the center. The ordinary elevator, when subjected to malleting, usually becomes indented, cracks from which permit the entrance of water during sterilization. The slightest tapping with the mallet causes the expulsion of water. This condition is disagreeable both to the patient and to the operator and is not in conformity with asepsis.

TECHNIC FOR UNILATERAL IMPACTION—TEETH IN ARCH CROWN PALATALLY
AND A DISTANCE FROM THE GINGIVAL MARGIN

(Classification No. 2)

The radiograms should be carefully studied to note if the crown portion lies palatally. The small film will aid in determining the proximity of the impacted crown to the gingival margin. If there is sufficient distance between the crown and the gingival margin, a semilunar or semicircular incision is made parallel with the gingivae. A sufficiently broad span of tissue must be allowed between the incision and gingivae for the following reasons:

1. After the overlying bone has been removed, there is an unobstructed view of the crown.
2. To be able to suture without destroying the tissue between the incision and necks of teeth.

A semilunar or semicircular incision is made. No fear need be entertained in making a good-sized incision (Fig. 33). Most failures result from the incision being too small, rather than too large. The exact extent of the incision must be determined from the radiogram. In the average case the crown portion approximates the mesial surface of the lateral incisor. Therefore, an incision extending from the mesial surface of the central incisor to a point approximately the second premolar would give an unobstructed view of the field of operation (Fig. 34). Round surgical burs will be found to be most expedient in removing the overlying bone over the crown in these cases (Fig. 35). The subsequent operative technic is analogous to the previous operation, with the exception of the suturing (Figs. 36, 37).

(To be continued)

DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Edited By
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and Howard R. Raper, D.D.S., F.A.C.D.

RADIOGRAPHING INCISORS AND CANINES*

By THOMAS P. HINMAN, D.D.S., ATLANTA, GA.

IT is not the intention of this paper to bring out anything new in radiographing incisors and canines. However, in an experience of well beyond a fourth of a century in radiographic work, I have found that these teeth are most frequently radiographed, and yet the work is rarely well done.

The reason for this, according to my observation, is that these teeth are either foreshortened, or the roots are lengthened by bad film position,—the incorrect position causing a complete distortion of the image. Extreme elongation of the teeth in the picture is sometimes due to an incorrect angle, or the bending of the film. This may be corrected by using the angle, which under normal conditions, would foreshorten the tooth. If the film is placed in the mouth so that it overlaps only one-half the incisor opposite the one to be radiographed, and the target aimed at the apex of the lateral incisor distally, better results are obtained.

Canines, as a rule, should be radiographed separately, and if the targets are aimed a little more mesially than distally, the image is usually better, for the reason that in the extreme distal view there is an overlapping of the roots. There are frequently two canals found in the mandibular premolars,—and occasionally also in the canines,—and for this reason also it is advisable to take the picture from a slightly mesial aspect. In fact, in radiographing incisors and canines, it is always wise to take films in three positions: First, direct; Second, mesially; Third, distally. In this way, a series of pictures will have been taken that will, as nearly as possible, give a reading of more than one surface of the root.

The mesial position is generally best for routine work. In this position, the mesiobuccal side is pictured. In the distal position, the buccodistal view is shown, and in this position great care must be taken as a distortion sometimes occurs on account of the curve of the maxilla.

*Read before the American Society of Dental Radiographers, Chicago, Ill., Jan. 20, 1924.

As the pulp chamber is usually easily defined in these teeth, the diagnosis should be made with special attention to pulp conditions because frequently, distortion of the pulp chamber is due to calcification of the pulp.

Too high penetration of the tube often causes a blurring of the trabeculae. The picture will not show enough contrast. Lower penetration and a little more time will always give a better definition to these areas; however, care must be taken because *too* low penetration will give a thin picture.

With the mandibular incisors, best results are obtained by radiographing a lateral and central on one film and the other lateral incisors on other films. If, however, this method is not used and the four incisors are taken on one film, a different position of the tube is necessary to get the right angle. In either event, less distortion of the image will be made if the tube points from a lower position than is ordinarily used; and if the target is aimed more distally than mesially, better definition is the result.

A majority of the pictures of these areas are usually overexposed or overpenetrated. This can sometimes be corrected in the development,—and I have found that these pictures are better if the development is checked a little earlier than is usually done.

To sum up the situation, I would say that the average radiograms of incisors and canines that come under my observation are practically of no value; particularly is this true of incisors. They are, as a rule, hurriedly taken, or the work is done by inexperienced operators. Undoubtedly, more errors are made in radiographing these teeth than any others; certainly very few good pictures of incisors come into my office.

As the best means of correcting this defect, I would urge the operator to give more time to his work. Instead of boasting about the few seconds it takes to make a picture, rather should he boast of the perfection of his technic and the fineness of detail.

As said in the beginning, I have not attempted to present any particularly new views or unique methods in radiographing incisors and canines. The paper is intended not so much for the experienced radiographer as for the man who is beginning radiographic work. To him, this is my closing word of advice: Do not have any preconceived ideas of what you are going to find when you examine the radiogram. Read the picture as it really is,—not as you hoped or perhaps expected to find it.

A NEW KIND OF X-RAY EXAMINATION FOR PREVENTIVE DENTISTRY*

By HOWARD R. RAPER, D.D.S., F.A.C.D., ALBUQUERQUE, N. MEX.

(Continued from April issue.)

XII

FURTHER DETAILS IN TECHNIC

The most important detail in technic has already been described. I refer to the use of the cotton rolls for the anterior teeth. Other points follow:

End-to-end Bite.—Have the patient bite "end to end" on the bite-wing for the anterior teeth (Fig. 25). When there is an overbite and the patient does not bite "end to end" the result is a confusion of overlapping shadows in the negative (see Fig. 32).

Regional Reduction.—In case of overexposure and overdevelopment in the region of the incisal edges, the error may be corrected by regional re-



Fig. 32.



Fig. 33-A.



Fig. 33-B.

Fig. 32.—Where there is an overbite, the patient should be made to bite "end to end" on the bite-wing. If this is not done the teeth overlap in the manner illustrated here, which prevents a clear view of the proximal surfaces.

Fig. 33-A.—A print made from a negative which was too dark (overexposed or overdeveloped, or both) in the incisal region.

Fig. 33-B.—Same as Fig. 33-A after photographic reduction of the negative in the incisal region. Reduction corrects the mistake of overexposure and overdevelopment in a very satisfactory manner.

duction with a suitable photographic reducer. (See Figs. 33-A and 33-B.) For technic of reduction see pages 100 and 101 "Radiodontia."†

Tipping.—Sometimes, if the operator is not careful, the film packet may get tipped as it is placed in the mouth (see Figs. 34-A and 34-B). This does not always spoil the negative from a diagnostic standpoint, but it may. It

*Copyright by Howard R. Raper.

†Raper: *Radiodontia, Dental Items of Interest Publishing Co.*

seems most likely to occur in the lateral region. I find I have a great deal less trouble with tipping since I have adopted the use of cotton rolls as herein described. An insufficient amount of bending of the corners of the film packet may cause tipping.

Expedients.—Where teeth are missing a piece of cork may be stuck to the bite-wing on that side if found desirable (Fig. 35).

As the patient is closing the mouth, if the packet causes discomfort, the patient can sometimes "wiggle the jaw sideways a little," then get the mouth closed in comfort. *Do not pull on the bite-wing.*



Fig. 34-A.



Fig. 34-B.

Figs. 34-A and 34-B.—Teeth on the film in diagonal manner. This may—but does not always—spoil the negative from a diagnostic standpoint; it depends on the extent of the tipping.

Fig. 34-A shows a little tipping; Fig. 34-B shows a little more. The use of the cotton rolls for the anterior teeth helps a great deal to prevent placing the film packet in a tipped position. If the packet is allowed to ride on the tongue, it will be forced too far upward and is likely to be tipped.

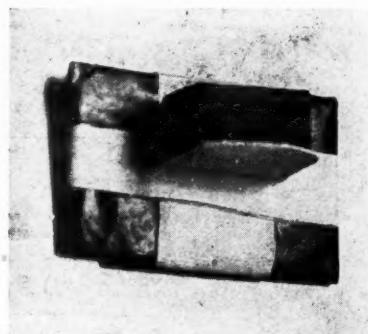


Fig. 35.—Where teeth are missing from one jaw a piece of cork may be glued on that side of the bite-wing, as illustrated. This is not necessary unless several approximating teeth are missing.

It is a good plan to dry the packets immediately after exposure, especially if they are not to be developed immediately. Dry with a napkin or between pieces of blotting paper.

Less Tension.—As the film packet is placed in the mouth I usually put it almost to place for the lower teeth, then have the patient bite slowly. When I first started to make interproximal examinations I made the mistake of using too much tension on the bite-wing; I learned not to pull it too tightly against the teeth, not to deliberately pull on it at all in fact.

CHART I
FIVE-FILM INTERPROXIMAL EXAMINATION TECHNIC CHART

REGION	FILM	BENDING THE FILM PACKET	COTTON ROLLS	VERTICAL ANGLE	HORIZONTAL ANGLE	POSITION OF FILM	REMARKS
Central Incisor Region	E a s t m a n special size	Bend all corners some	Use (Johnson and Johnson) medium size cotton rolls	About 10 degrees above (Angle (A n g l e Meter))	Straight between the maxillary central incisors	Mesiodistal center of film packet in the median line	The operator should make sure to get a view of the mesial surfaces of the maxillary central incisors. If there is much of an overbite have the patient bite end to end
Lateral Incisor and canine Region	Same as Central Incisor	Bend all corners some	Same as Central Incisor Region	Same as Central Incisor Region	Same as Central Incisor Region	Mesiodistal center of film packet just back of mesiodistal center of maxillary lateral incisor	The operator should make sure to get a view of the distal of the maxillary central incisor, mesial and distal of the maxillary lateral and mesial of the maxillary canine If there is much of an overbite, have patient bite end to end The distal of the mandibular canine is often included in this negative. Biting end to end helps get this surface on this negative

CHART I—CONT'D
FIVE-FILM INTERPROXIMAL EXAMINATION TECHNIC CHART

REGION	FILM PACKET	BENDING THE FILM PACKET	COTTON ROLLS	VERTICAL ANGLE	HORIZONTAL ANGLE	POSITION OF FILM	REMARKS
From the Eastman Canine Posterior or in- cluding Bite-Wing Packet Premolars and Mo- lars	Special size whole posterior part of the packet and also all corners, the distal ones slightly, the front ones particularly	From the Eastman Bend then the posterior part of the Bite-Wing Packet	No Cotton rolls ever needed.	About 8 de- grees above (Angle Meter)	Somewhat dis- tinct to lingually; or, expressed otherwise, at right angles to the line of the dental arch; or, still otherwise ex- pressed, par- allel with the mesial sur- face of the maxillary first molar.	Bend the mesial portion of the film packet and let the me- sial edge come almost to the mesial of the mandibular central incisors (or even farther in small mouths). There is sometimes a little overlap- ping of the second and third molars but not so often or so much as would be expected.	Get the distal of the maxillary canine, and both mesial and distal of the premolars and molars The distal of the mandibular canine will be obtained on this negative or the lateral region negative, some- times one, sometimes the other

General Remarks

Position of the Head.—Same for all regions, i.e., so that a line drawn from the tragus to the ala of the nose is horizontal.

Time of Exposure.—The time of exposure for the anterior teeth is less than for the posteriors.

Ordinarily the film packet is placed nearly in correct position for the mandibular teeth then the patient instructed to close slowly. For the most part, the operator "shoots" for the surfaces he wants of the maxillary teeth. (See "remarks" column of this chart.) If he gets what he aims for in the maxillary he will usually get what is wanted in the mandibular incidentally.

Do not pull on the bite-wing to bring the film packet tight against the teeth; it is unnecessary and causes the patient discomfort. The Eastman Company supplies bite-wing film packets in the following sizes: (1) Special Size Anterior B-W Packet ($1 \times 1\frac{5}{8}$); (2) Special Size Posterior B-W Packet ($1\frac{1}{4} \times 2\frac{1}{8}$); (3) Standard Size Posterior B-W Packet ($1\frac{1}{4} \times 1\frac{5}{8}$).

The Eastman Bite-Wing Packets are quite limber and require little bending; much less than is ordinarily necessary for the stiffer, more bunglesome homemade packets. The Eastman Special Size B-W Packets are for the time being at least handwrapped and have sharp corners. The operator must bend down these sharp corners before placing the packets in the patient's mouth.

CHART II
SEVEN-FILM INTERPROXIMAL EXAMINATION TECHNIC CHART

REGION	FILM	BENDING THE FILM PACKET	COTTON ROLLS	VERTICAL ANGLE	HORIZONTAL ANGLE	POSITION OF FILM	REMARKS
Central Incisor Region	Eastman Special size	Bend all corners some	Use (Johnson and Johnson) medium size cotton rolls	About 10 degrees above (Angle Meter)	Straight through between the maxillary central incisors	Mesiodistal center of film packet in the median line	The operator should make sure to get a view of the mesial surfaces of the maxillary central incisors. If there is much of an overbite have the patient bite end to end
Lateral Incisor and Central Incisor Region	Same as for Central Incisor Region	Bend all corners some	Same as for Central Incisor Region	Same as for Central Incisor Region	Straight through the maxillary lateral incisor	Mesiodistal center of film packet just back of mesiodistal center of maxillary lateral incisor	The operator should make sure to get a view of the distal of the maxillary central incisor, the mesial and distal of the maxillary lateral incisor and the mesial of the maxillary canine. If there is much of an overbite, have the patient bite end to end. The distal of the mandibular canine is often included in this negative. Biting end to end helps get this surface on this negative

CHART II—CONT'D
SEVEN-FILM INTERPROXIMAL EXAMINATION TECHNIC CHART

REGION	FILM	BENDING THE FILM	COTTON ROLLS	VERTICAL ANGLE	HORIZONTAL ANGLE	POSITION OF FILM	REMARKS
Canine, Premolar and First Molar Posterior Bitewing Pack-	Eastman Standard size Posterior Bitewing Pack-	Bend whole mesial part of packet and also all corners, the distal ones slightly, the mesial ones particularly	No cotton rolls needed.	Zero to 8 degrees (Angle Meter). Sometimes lower.	Distolingually, parallel with the mesial surface of the first molar	Bend the mesial portion of the film packet and allow the mesial edge of the packet to come almost to the mesial of the mandibular central incisors	Get the distal of the maxillary canine, mesial and distal of the molars and as much farther back as the film reaches. The distal of the mandibular canine will be obtained on this negative or the lateral region negative, sometimes one, sometimes the other
Molar Region	Same as for Canine, Premolar and First Molar Region	Same as for Canine, Premolar and First Molar Region	Same as for Canine, Premolar and First Molar Region	About 8 degrees above (Angle Meter). Sometimes higher.	Not quite so distolingually as for the Canine Premolar and First Molar Region	Not quite so mesial edge of film just mesial to the mesial of first molar	This negative will get the surfaces of the molars

General Remarks (See Chart I.)

Bending in the Middle.—It is well when bending the film packet preparatory to placing it in the mouth to hold the film packet with one hand and apply tension on the bite-wing with the other and see to it that such tension will cause the packet to bend in the center on a line parallel with the planes of the bite-wing (Fig. 36). Though the film packets should be constructed to bend in the manner described we do not want too much bending. To prevent too much bending in the anterior region cotton rolls are used.



Fig. 36.—The right hand exerts a gentle pull on the bite-wing. The thumb and middle finger of the left hand are on the edges of the film packet and the index finger pressed the back of the packet slightly to establish central bending. While film packets should be constructed so this central bending will occur, one does not want too much of it. To prevent too much bending cotton rolls are used in the anterior region.

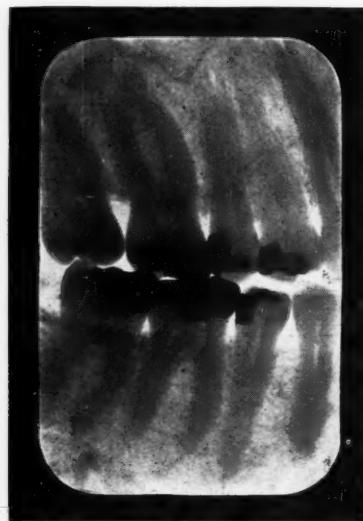


Fig. 37-A.



Fig. 37-B.

Figs. 37-A and 37-B.—Showing both maxillary and mandibular teeth including root ends and periapical tissues, made simultaneously on the same negative, intra-orally. A and B are of different cases. In Fig. 37-B, the mandibular first molar was extracted in early youth; this accounts for the tipping forward of the second molar into the place of the first.

Homemade Bite-wing Film Packets.—The homemade bite-wing film packets (Fig. 15) which I have used were made as follows: The things needed are: the films wrapped for protection against light and moisture; gummed cloth, say Dennison's white mending tape or Holland cloth; some cardboard, say bristol board; and, for the anteriors, some cotton rolls. Wrap the adhesive cloth around the packet allowing the ends to come out on the bite-wing proper, the cardboard. Split the other band of adhesive cloth, which is to go around

the packet the other way, and pass the projecting bite-wing through this slit as the adhesive cloth is stuck around the packet. That is one way in which the bite-wing packet may be made.

The size of the film which may be used depends a great deal on the manner in which the packet is made. A larger film can be used if the packet is neat and pliable than if it is bunglesome and stiff. Homemade packets are likely to be too big and stiff and bunglesome to be used except with difficulty. It is to be hoped that some manufacturer will make a really good bite-wing film packet.* The thinner and more pliable the packet up to a certain point, the better for the purpose of making interproximal examinations in the manner herein described.

Gagging.—In cases where gagging occurs use anesthesin caleidin tablets (Abbott) or Novesthene Troches (Novol Chemical Co.). Allow a tablet to dissolve on the tongue. Instruct the patient that he can keep from gagging as long as he can hold his breath. Gagging is a little less likely to occur than when making ordinary posterior dental radiograms.

Summary of Technic.—For a summary of technic, see the "Technic Charts" printed herewith.

First Work of Its Kind.—I regret not having been able to carry my experiments further, but much of my work has been done under severe handicap. My results shown in Figs. 6 to 10 in no way represent the finest work which can be done along this line. Instead, they are the first work to be done by this new method; time and experience will develop quality. The bite-wing film packets used were of a very crude homemade type as one may observe in the photographic illustrations of them.

(To be continued.)

*The Eastman Kodak Co. is now able to supply bite-wing film packets in the following sizes: (1) Special Size Anterior Films ($1\frac{15}{16} \times 1\frac{9}{16}$); (2) Special Size Posterior Films ($1\frac{1}{4} \times 2\frac{1}{8}$); (3) Standard Size Posterior Films ($1\frac{1}{4} \times 1\frac{5}{8}$). It is necessary to use the Special Size Posterior Films if the operator wants to make the 5-film examination. If the Standard Size Posterior Films are used it takes 7 films to make the examination. The special size films are put up, for the time being at least, in handmade packets. While they are tremendously superior to homemade packets, they nevertheless have very sharp corners which the operator must be careful to bend down before putting them in the patient's mouth.

ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

Endocrine Glands in Relation to Dental Nutrition. C. E. de M. Sajous (Philadelphia). The Pacific Dental Gazette, 1925, xxxiii, No. 3.

Artificially prepared extracts of organs are not the internal secretions of the same. The author, who wrote the first work on this subject two decades ago, is quoting from the most recent work by Vincent. Summing up the generalization of the latter he finds the general outlook discouraging and the net contribution of endocrinology to progress, during the two generations which have now elapsed since Brown-Séquard first took up the then new line of endeavor, very slight. Destructive criticism has robbed the subject of most of its original promise. To remedy this state of affairs Sajous would substitute for the physiologic method the so-called "all-science" method, in which the combined sciences, including of course, physiology, each contribute their quota of knowledge, with the attempt to coordinate the various finds. After some observations of general interest the author takes up the application of the "all-science" method to the endocrinology of the teeth. He first takes up the enamel cuticle or Nasmyth's membrane and assumes that whatever menaces the integrity of this structure favors the development of caries. These injuries set in motion various autolytic processes in this membrane, due to the presence of certain substances in the salivary secretion and bodies of the bacteria of the mouth. The former contains an oxidase and the latter phospholipoids. The oxidase in question is termed by Sajous adrenoxidase, which appears to be closely related to or identical with tyrosinase. He believes the same conjunction of oxidase and phospholipoids occurs in the dentine, having reached the latter indirectly through the blood, dentine itself being avascular. The same mechanism appears to underlie all forms of caries, whatever the efficient causes. Beyond showing that a derivative of the adrenal glands is partly responsible for caries in general as an autolytic phenomenon, the author does not appear to illuminate the subject from the practical side. No suggestions are forthcoming as to prevention, arrest or cure of caries. There is the suggestion that vitamine C is made up of adrenalin and adrenoxidase, or tyrosin and tyrosinase. The reader seems invited to believe that this vitamine can play a destructive rôle in the autolysis of the teeth. The same substance is able, of course, to prevent scorbatus with its loosening of the teeth by its mere presence in the diet.

Elsewhere he states that caries, being practically a disease of childhood, may be due in part to the disappearance of the thymus gland at this period by involution. Later on the thyroid may take over some of this function. The occurrence of caries in pregnancy when the thyroid enlarges he sets down to the hunger of the fetus for phospholipoids.

Pyophagia or Pus-Swallowing. Lebedinsky (Paris. *La Revue de Stomatologie*, 1925, xxvii, 298.

Under this title (pyophagia) the author considers the consequences of swallowing pus and the conditions which are responsible for it. With the exception of the case of the nursling who ingests pus from the maternal nipple in acute inflammation of the breast, the pus is derived from the patient himself. The latter gives origin to pus which cannot drain off and as it is reabsorbed the original faulty condition is aggravated, constituting a vicious circle. In pyorrhea alveolaris pus-swallowing is one of the chief complications; and owing to the great frequency of this condition and the continuous formation of pus to be swallowed, pyophagia may be regarded as almost synonymous with pyorrhea. Of other conditions which lead to pyophagia, purulent nasal catarrh and suppuration of the nasal sinuses suggest themselves, although in these conditions the "pus" may be largely mucus and mucopus and there is much less likelihood of swallowing it, owing to the constant use of the handkerchief and the custom of clearing the throat and spitting. In pyorrhea the pus is constantly mixed with saliva and swallowed.

Not only is pus swallowed but forms of bacteria are constantly being received into the stomach. What happens or should happen when pus and bacteria are ingested? Despite the bactericidal power of the gastric juice under favorable conditions, Hunter and others have, since 1901, reported cases of septic gastritis of dental origin. Naturally this type is not to be confused with various diseases of the newborn due to swallowing of pus from the mother. The former occurs in adults and usually there is deficient hydrochloric acid in the stomach, this being conceivably a predisposing cause of the gastritis although it may possibly be an effect. In addition to gastritis of this origin, there is also an enteritis (gastroenteritis), and probably also appendicitis, cholecystitis, pancreatitis, colitis, etc. In addition the disease germs may find their way into the circulation—the portal first and then the general, where they may conceivably set up hepatitis and various types of focal infection. It is known that among the latter we are especially apt to see some form of renal infection, due partly to nature's attempt to expel the bacteria in the urine, although there is also a nephrotropic tendency of the bacteria to set up disease in these organs. Thus perirenal abscess, pyelitis, pyelonephritis, calculus disease, etc., have all been known to follow dental infection, not only in the clinic but in animal experiment, notably in the experience of the pathologists of the Mayo Clinic. But the other systems of the body are by no means immune and cardiac affections, joint lesions, certain dermatoses, etc. are all well known to occur from dental infection, the chief bacterial cause being apparently the *Streptococcus viridans*.

Present Status of Odontoplasty. Hauberisser (Göttingen), *Zahnaerztliche Rundschau*, Feb. 8, 1925, xxxiv, No. 6.

The author restricts the word "odontoplasty" to the implantation of teeth, a subject which goes back at least to the sixteenth century, and which was studied experimentally by John Hunter late in the eighteenth century. Although practiced now and then this art never really became a part of routine dentistry, despite numerous revivals and new developments. In 1863, Mitscherlich proved by the microscope that implanted teeth really heal and in 1890, Scheff, by means of repeated animal experiments, showed that the idea of implantation was fundamentally sound. Recently Schroder has made interesting experiments on implanting artificial roots.

The author subdivides his subject as follows: Replantation, which is simply putting back into its socket a tooth which has been knocked out; transplantation, when a tooth is transplanted from its own to a strange alveolus properly prepared, and implantation in the restricted sense which is more comprehensive in scope than the preceding, including as it does the possibility of implanting an artificial tooth into an artificial alveolus. As in other transplantation, we may speak of autoplasic and heteroplasic material. Of the three subdivisions replantation for dislocated teeth and teeth erroneously pulled is thoroughly sound in conception and feasible in practice. Another group consists of premolars and molars which may be replanted after resection of a diseased root. No data are given as to whether this has ever been successfully attempted, although theoretically it is quite possible. For the sake of completeness the author mentions the replanting of pyorrhea teeth. This practice was once thought justifiable but with advancing knowledge it seems to have rested on imperfect information.

Transplanting a tooth from one alveolus to another has a very restricted field and only under unusual circumstances do we find it practicable to extract a tooth for planting in an empty alveolus. The author does not even allude to heterotransplantation in which the supposed wealthy individual who has forcibly lost a tooth buys the desired article from a donor who presumably needs the money. Under the third method—implantation—the author merely mentions a few attempts to introduce artificial teeth or roots of ivory, porcelain, gold, etc., in connection with bridgework. Such pioneer efforts do not seem to have been very successful thus far.

Bleaching the Teeth by Ultraviolet Rays. J. Betancourt (Madrid). *The Dental Surgeon*, 1925, vol. xxii, p. 164.

The author states that he has nothing to say for or against methods of bleaching now and heretofore in vogue, but wishes only to place a new one on record. This may not prove popular, for the Kromayer lamp is somewhat expensive and its technic complicated. With these exceptions he can recommend the method warmly as efficient, simple and economical (after the apparatus has been installed and mastered). The dentist should never, though he often does, begrudge the time spent in bleaching the dead tooth. The alternative from the

cosmetic angle is bleaching a conspicuous dead tooth or substituting a pin tooth of the proper color. It is true that the latter requires less time but the patient will often prefer to retain his tooth and will cheerfully pay for the elapsed time.

Before bleaching the dead tooth the filling, if any is present, must be removed, the roots carefully treated and stopped up for two-thirds the length with guttapercha. The entire surface of the dentine is then freshened up with the bur and the thickness of the dentine must be uniform. The tooth is now isolated from the other teeth and the gum by a rubber dam. A special lens is interposed between the objective lens and the tooth, which reduces the diameter of the luminous circle from 15 cm. to 2 cm. The minimum distance between the adapter lens and the tooth should be about 12 cm. The tooth may become warm during the exposure and if desirable a filter can be interposed by inserting in a special groove in the apparatus. While in focus the tooth is kept constantly wet with perhydrol in order that dentine and enamel be impregnated, the cavity of the tooth, newly excavated with the bur, being also moistened with a pledge soaked in perhydrol. The latter is applied to the outer aspect of the tooth on little slips of silk paper moistened with it and these moistened pledges are continually renewed. The duration of the exposure should be fifteen to twenty minutes and at the close there should be a temporary cement filling made which should again come out at the end of twenty-four hours. Should the result of the bleaching process be perfectly satisfactory a permanent filling should replace it; otherwise another session of bleaching may be tried. The author has bleached to a satisfactory shade a tooth the color of which corresponded to No. 22 in the Solila scale. In a discussion which followed, the author, in response to questions, stated that the bleaching lasts for two years on the average. One dentist preferred the mechanical use of the drill to some extent and another, in using perhydrol without the rays, had seen periodontitis result. The author found the lamp plus perhydrol gave better results than either alone.

The International Journal of Orthodontia, Oral Surgery and Radiography

PUBLISHED THE FIFTEENTH OF EVERY MONTH BY
THE C. V. MOSBY CO., 3616 Washington Blvd., St. Louis, Mo.

Foreign Depots—*Great Britain*—Henry Kimpton, 263 High Holborn, London, W. C.; *Australasia*—Stirling & Co., 317 Collins Street, Modern Chambers, Melbourne; *India*—“Practical Medicine,” Egerton Street, Delhi; *Porto Rico*—Pedro C. Timothee, Rafael Cordero 68, San Juan, P. R.

Subscription Rates.—Single copies, 75 cents. To anywhere in United States, Cuba, Porto Rico, Canal Zone, Mexico, Hawaii and Philippine Islands, \$7.00 per year in advance. Under foreign postage, \$7.40. Volume begins with January and ends with December of each year.

Remittances.—Remittances for subscriptions should be made by check, draft, postoffice or express money order, or registered letter payable to the publishers, The C. V. Mosby Company.

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Entered at the Post Office at St. Louis, Mo., as Second-Class Matter.

EDITORIALS

Dental Education

IN this issue of the INTERNATIONAL JOURNAL OF ORTHODONTIA, ORAL SURGERY AND RADIOGRAPHY, will be found a plan for dental education proposed by Dr. Guy S. Millberry, Dean of the College of Dentistry, San Francisco. This plan was mailed to the office as a bulletin under date of February 14. The entire bulletin is published because the journal has always been interested in dental education and particularly in the education of orthodontists and radiographers.

The plan proposed by Millberry also makes special provision for orthodontists, research workers and technicians. We are also republishing a chart which accompanied the bulletin and which is a graphic scheme of the manner in which dental education has been outlined by Dean Millberry. It will be

noticed that the plan makes provision for the education of dental assistants, dental hygienists, dental technicians and dental radiographers.

We have never been convinced of the wisdom of the plan proposed by Millberry for the dental hygienist and dental technician as an adjunct to the dental profession. By creating hygienists and technicians, it seems to us that we are lowering the dental requirements in one place and raising them in another. If the dental hygienist and technician can be controlled according to the plan outlined by some educators, it might be feasible to admit them. However, the experience that the European countries have had with dental technicians and dental dressers leads us to believe that they will eventually be a troublesome group, if given the privileges and education as planned by Millberry and others.

The dental radiographer has always been a troublesome individual who crept into the profession by means of the commercial laboratory. We believe it is extremely dangerous to allow anyone to make dental radiograms who does not possess all the knowledge required by the dentist. Millberry proposes the education of the dental radiographer should cover "two years of academic instruction with laboratory practice which will qualify the individual to perform all routine technical procedures." Training of the dental radiographers would not include treatment, diagnosis or interpretation. He further states: "Such persons should be employed as assistants under the direction or supervision of competent professional men." This plan is very good but it fails to provide for any means of enforcing and carrying out the plan as outlined. We find commercial radiographers in most states, regardless of the law, who are not working under the supervision or direction of a professional man. We are afraid the plan as outlined for the education of the radiographer would simply be another method of creating more commercial laboratories.

The plan for the education of dentists is quite radical in the face of the modern educational tendencies and we are pleased to find the dean of a school with the courage of his convictions standing for a practical education of dentists. Concerning the present tendency of education we find Millberry states: "Until such time, if ever, as the requirements of dental practice in each of its phases demand a longer period of training to prepare the individual adequately for practice, it seems to be economically unwise to insist that all persons be required to comply with such higher requirements as are now demanded. If 80 per cent of dental practice consists of repairing or replacing lost teeth or parts thereof, of simple extraction and mouth hygiene, why train persons longer than is required to teach them to render such services?" We have always contended it an unnecessary economical waste to require the dental student to spend four years in high school, two years in academic training and four years in professional training. We believe four years of high school and four years of dentistry sufficient to train the student to do everything required in the practice of dentistry. In fact, it has never been demonstrated that the student with four years of dental college training is any better prepared than the student formerly was with three years of training. The plan under discussion provides for continued study and it will

be seen by referring to Group V. A greater amount of professional training is provided under special heading "Dental Surgeons." This course leads to a special degree and is planned to include oral surgery and orthodontia as subjects which would lead to a master's degree.

To put Millberry's plan into practical operation would require changing most state laws, especially to follow out his suggestion that no one be allowed to practice oral surgery or orthodontia who has not received a special course of instructions and received a master's degree. We are afraid it would be years before such a plan can be carried out owing to the fact that every dentist has a legal right to practice oral surgery and orthodontia just as every medical graduate has the right to do surgical operation or practice any phase of medical science. We believe specialists in dentistry and medicine should be created by a superiority of service and not by legal statute.

The public is the best guide as to who is qualified to practice a certain specialty. The plan as a whole shows a great amount of careful study and is the best plan for dental education we have ever seen proposed by a dean of a university.

The Twenty-Fourth Annual Meeting of the American Society of Orthodontists

ON Tuesday, April 14, Atlanta, Georgia, had the distinction of being the host of the American Society of Orthodontists at the twenty-fourth annual meeting.

The meeting was called to order at the Atlanta-Biltmore Hotel, by the President, Dr. C. C. Howard, at which time the minutes of the last session of the twenty-third meeting at Kansas City were read and approved. The chairman of the Board of Censors presented the report of the board in which he reviewed some of the suggestions made by Dr. Waldron, in his presidential address before the meeting at Kansas City in 1923. Waldron suggested that a certain sum of money be spent for orthodontia research and the committee which reported on the president's address seemed to have confused the issue by using such terms as the "Board of Censors" and "Board of Directors" and the "Executive Committee" as though they were synonymous. As the American Society of Orthodontists does not possess a Board of Directors, and as the Executive Committee is composed of the elected officers and the Board of Censors, and furthermore as the Board of Censors is only a part of the Executive Committee, we can readily see why Dr. Young, Chairman of the Board of Censors was justified in calling the attention of the society to the confusion which existed. The report was received by the society without any definite action being taken on the suggestions or conditions made by the Board of Censors.

After the reading of the secretary-treasurer's report, Dr. Fisher presented the plans of the Organization Committee of the First International Orthodontic Congress. The American Society of Orthodontists moved to become a part of the International Orthodontic Congress and Dr. Frank M. Casto was nominated as a member of the Board of Directors of the Congress. The fol-

lowing honorary presidents were elected: Dr. B. L. Lischer of St. Louis, Dr. Milo Hillman of New York and Dr. Guy Hume of Toronto, Canada.

The President, Dr. Howard, then called Dr. Fisher, President-Elect, to the chair while the president delivered his annual address. Howard made a special plea for closer cooperation between the orthodontist and the general medical practitioner, especially calling attention to the fact that many deformities of the dental arches were closely related to the similar osseous defects which were present in other parts of the body. The president suggested that it would probably be advisable at some later date to take recognition of the fact that various local orthodontic societies were being organized and should in some way become component parts or be recognized by the American Society of Orthodontists. The committee which was appointed to consider the president's address evidently did not appreciate the importance of Howard's suggestions. A similar statement of facts in regard to the necessity of cooperation between local societies and the American Society of Orthodontists was made by Dr. Sorrels in his presidential address before the Southwestern Society of Orthodontists previous to the meeting of the American Society of Orthodontists. We realize there would be considerable difficulty in taking the entire number of sectional orthodontic societies into the American Society of Orthodontists because of the difference in the qualifications for membership and we do not consider it would be wise for all local societies to have the same qualifications for membership as the American Society of Orthodontists. We believe that the American Society of Orthodontists should recognize these sectional orthodontic societies and sanction or sponsor their organization in order to discourage the organization of orthodontic societies by men who are not recognized in the science of orthodontics to the extent that they should be allowed to organize special societies. We refer to the condition which exists in Chicago where a group of dentists interested in a particular technic of appliance construction, as advocated by the manufacturer, have organized themselves under a very misleading name. These men are not specializing in orthodontia but are simply following the technic advocated by a manufacturer of a certain appliance under the mistaken idea that they can get money from the public by the use of this appliance. Members of this society are given a certificate which a great many of them have framed and have hanging in their offices. If the American Society of Orthodontists had made some provision for sponsoring the organizations of sectional orthodontic societies, it would be very easy for the public to distinguish between societies which were affiliated and sponsored by the American Society of Orthodontists and others which were outlaw societies. We believe the suggestion made by Dr. Howard relative to the necessity and the advisability of recognizing sectional societies should receive some consideration.

Dr. Jacob Gorman, of New Orleans, La., gave a paper dealing with the "Importance of a Thorough X-Ray Examination Before Treating Cases."

"Orthodontic Treatment of Cases of Distocclusion with Pin Appliances and Inclined Planes" was presented by Dr. George Grieve, Toronto, Ont. This paper was one of the best and most logical presentations on the treatment of distocclusion that we have ever heard. Grieve made a plea for the more

careful study of the treatment of distoelusion and suggested that the successful treatment of distoelusion could only be accomplished by a plan of treatment that will result in the development of the mandible which will carry the entire dental apparatus forward as related to the face and cranium. He was very careful in selecting his terms so as to distinguish between the misleading plan of treatment called "jumping the bite," which some men believe to be a practical and successful method of treating distoelusion when a growth condition is produced in the mandible. Grieve showed a number of cases in which it could be clearly seen, by the study of the facial profile, that the mandible had been developed. The presentation was the most logical we have ever listened to and was so presented that any one could follow the plan of treatment by using the style of appliance suggested. We believe it is possible to get the same result with a little different appliance, but the important thing in treatment is to remember the biologic fact that bone development, by mechanical stimulation, and the appliance supply the mechanical stimulation of the mandible. After listening to the beautiful presentation by Grieve, we were somewhat surprised to find the discussers befogging the issue by casting uncomplimentary suggestions on certain terms which had been recognized by the committee on nomenclature, and to a great extent missing the important point in Grieve's paper. We believe the discussers would certainly save the time of the society if they would confine themselves to the point as stated by the essayist and not try to write a humorous discussion which has little scientific value.

Dr. Ralph Waldron presented a paper on the "Selection of Appliances in the Treatment of Malocclusion" in which he showed eighteen cases on which various appliances were used in the treatment. The subject was well presented but the paper was inclined to be too lengthy to hold the attention of the audience through the entire paper.

A special program had been prepared by the president, an announcement of which was mailed to all members of the American Society of Orthodontists. This program contained essays by men of recognized standing, dealing with subjects closely related to orthodontics. The board of censors had made no provision to accept the essayists selected by the president as a part of the official program, so on Tuesday afternoon Dr. Lisher made a motion that "the special program as announced on the supplement be made a part of the official program and published with the proceedings and all expenses thereto be paid." The motion was seconded without discussion and was carried unanimously.

On Tuesday evening, April 14, Dr. Hugh W. MacMillan, of the Department of Anatomy of the University of Cincinnati, presented a paper on the "Structural Characteristics of the Alveolar Process." MacMillan showed radiograms of the structural characteristics of the alveolar process as related to the teeth. He also showed radiograms of various parts of the temporomandibular articulation, which further established the fact that the shape of the condyle is dependent upon the occlusion of the teeth. The subject, as presented by MacMillan, was a further substantiation of the paper presented by Grieve on Tuesday afternoon, and further established the fact that proper

treatment of posterior occlusion depended upon the development of the mandible. MacMillan's paper showed changes in the osseous structure as a result of different functions.

"The Relative Value of Known Laws of Inheritance as Applied to a Broader Interpretation of Dental Arch and Jaw Development" was presented by Dr. R. C. Rhodes, of Emory University. In this paper, as its title suggests, Rhodes discusses the value of known laws of inheritance and calls attention to the fact that there has been no presentment of evidence which would tend to correlate the laws of inheritance and the transmission of malocclusion. He seemed to think that possibly certain types of malocclusion could be transmitted but no facts were available as had been worked out in regard to other definite characteristics.

The meeting was called to order Wednesday morning, with the usual transaction of business. The members were disappointed to learn that Dr. E. B. Cayce, who was to present a paper, "Nasal Pathology Resulting from Neglected Cases of Malocclusion Which Will Resolve Itself into the Effect of Mouth Breathing," was unable to be present. The time allotted to Cayce's paper was given to the discussion of Waldron's paper which was presented on the previous day. The committee reported on the president's address, which report was accepted with thanks. Nomination of officers resulted in the following:

President: Walter H. Ellis, Buffalo, N. Y.
Secretary-Treasurer: Charles R. Baker, Evanston, Ind.
Members of the Board of Council: Dr. W. E. Flesher,
Oklahoma City, Okla.; Dr. L. M. Waugh, New York, N. Y.

The American Society of Orthodontists adjourned.

The members were called to order by Dr. Wm. C. Fisher, Chairman of the Organization Committee of the First International Orthodontic Congress. Fisher read his report in regard to the number of societies that had joined in the organization plan by electing a member to the Board of Governors, making nomination for honorary presidents, and such other details as had been outlined by the organization committee. The organization of the congress was completed by the election of Wm. C. Fisher, President General; Walter H. Ellis, Secretary General and E. Santly Butler, Treasurer General. The organization of congress being completed the meeting adjourned.

Wednesday afternoon session was called to order by the President, Dr. C. C. Howard. Dr. Alfred P. Rogers of Boston, Mass., read a paper on "Simplified Orthodontic Treatment." This paper dealt very largely with the question of muscle training which subject had been written on by Dr. Rogers previously. The paper was discussed by Dr. L. M. Waugh, who took occasion to present his views in regard to the anatomy of the temporo and mandibular articulation and made statements contrary to those made by Grieve on the previous day relative to the possibility of developing the mandible. Dr. Waugh seems to hold to the theory that the mandible cannot be developed and such changes as are produced occur in the regions of the condyle and the alveolar portion of the mandible. We were somewhat surprised to hear the

discusser present such views after having listened to MacMillan's presentation on the previous day in which he called attention to the inability to distinguish the so-called alveolar process from the body of the mandible. MacMillan, as well as Grieve, held to the view that the mandible can be developed in response to function, which statements were contradicted by Waugh, who presented no facts to substantiate his views. The rest of the day was given over to clinics and as it was impossible for the writer to visit all the clinics the reader will have to wait for the published proceedings of the American Society of Orthodontists before getting the details of the clinics.

Wednesday evening, the members listened to a paper by Dr. V. P. Blair of St. Louis, on "Surgical Correction of Various Types of Mal-Relation of the Jaws." Blair showed several cases in which he had obtained striking results in the treatment of harelip, and cleft palate. He also had several cases of ankylosis which were greatly improved by operation, not only as to function but also in regard to appearance. Some of these cases shown by Blair conclusively proved that the patient can masticate without the head of the condyle. His clinical result substantiated the views held by many that the head of the condyle does not control the mandibular movement and is not necessary to the function of mastication. It would be rather interesting to know how some of the men who thought differently could argue away the facts presented by Blair in his paper.

Thursday was devoted to entertainments which consisted of taking the entire membership of the American Society of Orthodontists to Stone Mountain where they viewed the beginning of the greatest piece of monumental sculpture of all ages. The automobiles supplied for this trip were furnished by members of the dental profession of Atlanta. The members were brought back to the Druid Hills' Golf Club, where they were entertained by an old-fashioned Georgia barbecue and Brunswick stew. Dr. Thomas Hinman, President of the Druid Hills' Golf Club, and a member of the dental profession known to all, aided in the entertainment of the guests. Big Bethel Choir entertained the crowd after lunch by rendering vocal selections characteristic of the colored people of the South. To those who never heard the southern negro sing his own music it was a very delightful surprise and greatly enjoyed by all present. Another feature of the entertainment was a golf match in the afternoon and an exhibition match had been arranged between Bobby Jones and Dr. Harry Hosmer, of Detroit, who had as their opponents two persons whose names we do not remember. The sport section of the Atlanta paper next morning contained the following headline, "Two Tech Students Defeat Bobby Jones and Dr. Harry Hosmer." We did not have the nerve to read further.

On Thursday evening, at eight o'clock, the members were instructed by a resumé of five hundred cases studied at the Good Samaritan Clinic, Atlanta, Ga., correlating the bone development of the mouth and body. This presentation was made by Dr. Arch Elkin, medical director of the clinic. Elkin is an endocrinologist of national repute; he has the assistance of thirty-two physicians and one orthodontist, representing nine specialties in medicine. The Good Samaritan Clinic is a charitable organization founded primarily for the

study of the development of the individual with the view of correlating deformities which exist in the jaws and those found in other parts of the skeleton. The presentation was very interesting. We know of no other clinic in the world conducted along the same plan for similar purpose. We expect this clinic to render valuable work for the orthodontia specialty in the near future.

Friday morning, Dr. Robert Dunn of San Francisco, presented a paper, "Vertical Overbite or Arrested Vertical Development in the Molar and Premolar Region." This paper was based upon Dunn's observation and several statements were made which were not substantiated by correlated facts. However, the paper was well written and illustrated by lantern slides which were to substantiate the views presented by the essayist. Owing to the length of the paper and small amount of time, the discussion was not as general as it would have been if the essayist had not consumed so much time in presenting his subject.

Dr. J. D. Eby read a paper on the "Trend of Orthodontia and the Problem of Proper Education." This paper was very largely a presentation of ideas which had been brought forth by writings at various times. Discussion was opened by Dr. A. LeRoy Johnson, but owing to the lateness of the hour no one else discussed the paper. However, a motion was made to allow all who desire to prepare a discussion in writing and submit it to Dr. J. D. Eby, who would read it and reply to it in his closing discussion which was also to be written. Friday afternoon was devoted to case reports which will be published as part of the proceedings of the society.

With the supplementary program which the president had prepared, the meeting of the American Society of Orthodontists was a decided success from a point of instructive and scientific subjects presented. Thirty-seven new applications for membership were presented which, if not the greatest number ever presented at a meeting, is very close to it. The attendance from the North and the Northwest was not as large as had been expected but nevertheless we believe that orthodontia was benefited by holding the meeting in the South. While a great many members object to traveling a great distance, we believe in the near future the meeting should be held at the Pacific Coast; probably 1928 would be a very satisfactory time.

The Fifth Annual Session of the Southwestern Society of Orthodontists

THE Fifth Annual meeting of the Southwestern Society of Orthodontists was held at Tulsa, Okla., April 8 to 11, 1925. The Southwestern Society is one of the youngest orthodontic societies, but from a point of attendance and interest shown at the meeting, it ranks well with the older societies.

Wednesday was given over to a golf tournament, participated in by the members of the Southwestern Society of Orothodontists and dentists of Tulsa and vicinity. The Gridiron Banquet was held Wednesday evening, with Dr. Oscar E. Busby as toastmaster. It would be useless to attempt to try to describe a banquet arranged by the Southwestern Society with Busby as toast-

master as it can only be understood and appreciated when attended. We hope it will be our good fortune to attend many such banquets.

Thursday, April 9, an address of welcome was given by Dr. John W. Temples, of Tulsa, responded to by Dr. W. E. Flesher, of Oklahoma City.

The presidential address by Dr. T. W. Sorrels, reviewed the development of orthodontia in the southwest before and since the organization of the society. He called attention to the advisability of having some cooperation between the local orthodontic societies and the American Society of Orthodontists. The discussion was opened by Dr. T. O. Gorman, San Antonio. The next paper was entitled "Facial Muscle Action, as Connected with Orthodontic Treatment," by Dr. H. B. Robison, Great Bend, Kans. We have listened to many papers on muscle action as a factor in the treatment of orthodontia but it remained for Robison to present the most practical and scientific paper on the subject that we have ever heard. The discussion was opened by Dr. Williams of Shreveport.

At 12:15, a luncheon was given by the Southwestern Society of Orthodontists to the visitors and dentists of Tulsa and vicinity. Dr. Mosby delivered an address dealing with the "Relativity of Orthodontist to Dentist and Laity." This address was very timely and he handled the subject in a very creditable manner and expressed the viewpoint of one who had an intimate knowledge of the three phases of the subject.

The afternoon session was opened by Dr. A. L. Walters of Tulsa, who read a paper on "Dietetics" which was followed by general discussion. Dr. Lehman of St. Louis gave an illustrated lecture on the "Regeneration of Bone," in which he showed beautiful photographs of bone regeneration that had been obtained in experiments conducted at the Barnes Hospital.

Thursday evening, the Southwestern Society of Orthodontists carried out a program which, from a standpoint of education, had never before been attempted. By a carefully arranged campaign that had placed notices in the hands of practically all of the people in the southwestern territory, attention had been called to a "Health Talk" which was broadcast from station KFRU, Bristow, Okla. Through the cooperation of the radio stations, other radio stations using the same wave length were shut down at that time. It was estimated that over three million heard the "Health Talk" which was broadcast, dealing with the relation of orthodontia to general health. The Southwestern Society of Orthodontists deserves a great deal of credit for putting on a publicity campaign that had such wide-reaching effect.

Friday morning was characterized by a series of table clinics in which various members of the Southwestern Society took part. On Friday afternoon, Miss Blanche Doyle of Tulsa, read a paper entitled "The Dental Hygienist in Orthodontic Practice." Miss Doyle has been associated with Dr. McCarty for a number of years and consequently was able to present the subject very thoroughly. It evoked considerable discussion, most of which was favorable in nature. Dr. H. C. Pollock read a paper on "Orthodontic Office Methods." He laid stress on a carefully organized office force to take care of details which should not be handled by the orthodontist himself. "The Correction of Posterior Occlusion" was the subject of a lecture given by

Martin Dewey, in which he reviewed various methods employed in times past and laid stress upon the advisability of employing a plan which would produce a development in the mandible which would prevent the mandibular teeth from returning to their old position and thereby allowing the deformity to recur.

Friday evening was given over to an educational lecture which was followed by Dr. H. C. Pollock, who showed moving pictures of his recent trip to Florida and "The Beauties of Our Rocky Mountains."

On Saturday morning, Dr. Busby presented some of the ideas that were discussed in the orthodontic conference in 1925. A number of clinics were presented by various members who took part in the orthodontic conference at Philadelphia. Dr. John W. Temples of Tulsa, gave an illustrated talk on "Histology of the Peridental Membrane and the Alveolar Process as Related to Orthodontics." Dr. H. B. Robison, Great Bend, presented a paper dealing with the "Investigation of Relationship of Malocclusion in Those Victims of Insanity in Kansas Penal Institutions." This paper was very well presented and showed a large amount of study.

Dr. T. M. Robertson, Coffeyville, gave a paper entitled "Orthodontic Treatment During Physiologic, Rather than Pathologic Stage." A number of clinics were given by members of the profession in the afternoon.

At the close of the meeting a large number of the members left in a special car over the Frisco to Atlanta, Ga., to attend the meeting of the American Society of Orthodontists.

The Southwestern Society of Orthodontists probably has the smallest membership of any society considering the amount of territory it covers and a great many of the members have to travel a long distance to attend the meetings, nevertheless, a large percentage is always there. The society is rather unique in its organization as regards membership fees and dues in the society, which is probably necessary because of the geographical location of the various members. We believe the Southwestern Society of Orthodontists are doing more to raise the standing of orthodontia in that community than any other factor.

ORTHODONTIC NEWS AND NOTES

American Society of Oral Surgeons, and Exodontists

The Seventh Annual Meeting of the American Society of Oral Surgeons and Exodontists will be held at the Brown Hotel in Louisville, Kentucky, on September 18 and 19, 1925, the Friday and Saturday preceding the Meeting of the American Dental Association.

Earle H. Thomas, Secretary,
30 N. Michigan Avenue,
Chicago, Illinois.

First District Dental Society of the State of New York

The First District Dental Society of the State of New York announces the establishment of an annual cash prize for original dental research. This prize is made possible by the generosity and public spirit of the late Morris L. Chaim, who bequeathed to the First District Dental Society the sum of \$5,000, the interest therefrom to be awarded annually as a prize for original dental research.

The conditions are as follows: A thesis must be presented to the First District Dental Society, 250 West 57th Street, New York City, accompanied by a suitable description of experimental work and bibliography. Material for the first award must be submitted not later than January 31, 1926. The award is not limited to members of the dental profession.

In addition to the Morris L. Chaim Prize, the First District Dental Society will award annually, a cash prize of \$250. This prize will be awarded to that contribution submitted for the Morris L. Chaim prize, which in the judgment of the committee, shall have the most valuable immediate practical application to the practice of dentistry.

The names of the judges will be published at an early date.

Leland Barrett,
Milo Hellman,
Alfred Walker, Chairman.
100 West 59th Street, New York.

Notes of Interest

Dr. Frederick W. Black announces the removal of his office from 113 Summers Street to Suite 509-14 Perry Building, Bluefield, West Virginia. Practice limited to orthodontia.

Dr. Augustus B. Holt announces the removal of his office to 54 Park Avenue, New York. Practice limited to orthodontia.

Dr. R. C. Willett announces the removal of his office to 535-536 Jefferson Building, Peoria, Illinois. Practice limited to orthodontia.

Dr. William E. Flesher announces the removal of his offices to Suite 806 Medical Arts Building, Oklahoma City. Practice limited to orthodontia.